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THE VETERINARY JOURNAL

A Monthly Review of Veterinary Science.

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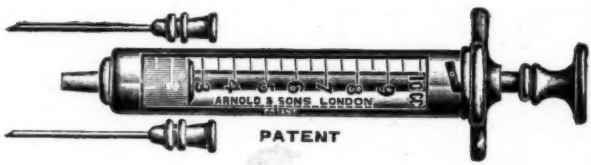

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THE

VETERINARY JOURNAL

JANUARY, 1911.

Editorials.

TO OUR READERS.

WE take this opportunity of wishing all our readers, at home and abroad, a very prosperous New Year, and at the same time of thanking all our contributors for their assistance during the past year. From a scientific aspect, we consider that the VETERINARY JOURNAL of the past year has excelled itself. Our entreaties for clinical reports have been very generously responded to, and yet we dare to hope for a still more generous response during the present year. We have also gratefully received suggestions from our readers, and have been able to adopt some of them. The most recent suggestion we have received is that we should devote a little space to veterinary agricultural matters, and so from time to time we hope to present to our readers original articles and abstracts of recent work on such matters, which should be specially useful to our *confrères* practising in agricultural districts. We shall gladly welcome other suggestions from our readers likely to increase the sphere of usefulness of the Journal. Many of our supporters have promised reports of their unusual cases and the results of treatment, and we trust they will adhere to their promises, whether the results have been favourable or otherwise; for we learn quite as much, and often more, from our failures as our successes. Moreover, as one of our contemporaries has said, "the experience of any one practitioner is too limited as a basis for forming many opinions. It is the collective experience which provides the really valuable premises on which practice and success depend." That being the case, we ask our readers not to be backward in recording failures of any particular line of treatment that has been much vaunted, nor to refrain from

recording success because a similar success has already been recorded. It is "collective experience" that is wanted.

W.

INTERTRANSMISSIBLE HUMAN AND ANIMAL TRYPANOSOMIASES.

IT would be difficult to over-estimate the enormous importance of the results of investigation recently recorded by Colonel Bruce and others in a paper read before the Royal Society, and which we hope to reproduce in our next issue. Bruce and his co-workers have been able to prove conclusively that cattle may act as a reservoir of the virus of sleeping-sickness. They have shown that cattle are susceptible to the *Trypanosoma gambiense*, that they can be naturally or artificially infected by means of flies (*Glossina palpalis*), that the virus can be conveyed by means of the flies from affected to healthy cattle, and, moreover, that some cattle living in the fly area actually do carry the virus of sleeping-sickness. These facts certainly bring the study of sleeping-sickness into the domain of the veterinarian.

Then hard upon the announcement of Bruce comes the original communication from Mr. Bevan, which we publish in this issue, concerning another trypanosome which is transmissible by inoculation into sheep. It is very interesting to note that the trypanosome referred to by Bevan was obtained from a human subject, and has been identified as *T. vivax*. This trypanosome is known as causing disease in cattle, sheep, and goats, in the Cameroons (German West Africa), but we are unaware of its having been previously found affecting human beings.

These reports extend the already wide field for investigation in which medical men and veterinary surgeons should work together, and we confidently look forward to a great increase in our knowledge concerning these diseases during the present year.

W.

MR. R. C. TRIGGER AND MR. R. E. L. PENHALE.

THE position of Mayor of a Borough is one of the highest honours the citizens of a town can confer, and that, at the last change of rulers over municipal affairs, two towns should have selected members of our profession to occupy the position, especially during such an important year as the present, is a fact of which we may be

legitimately proud. Many of our members are doing good work on City and Borough Councils, and it would be a good thing for the country if the numbers were greater; for their advice on very many matters affecting Public Health is very necessary and could not be given in a better cause, especially on sanitary questions affecting meat and milk.

Mr. Trigger and Mr. Penhale are both busily engaged in large practices, and that they have found time to devote to Municipal affairs speaks volumes for their industry and broad-minded spheres of thought. Both are well known in the profession, and the opinion of each is much sought after both by their professional brethren and by a very large circle of clients.

Mr. Trigger has already received the highest confidence of the veterinary profession, having been elected as President of the Royal College of Veterinary Surgeons in 1897; and, amongst other positions too numerous to mention in detail, he has for more than twenty years been a leading Member of the Council of the Governing Body, also President of the National Veterinary Association, and President of the Midland Counties Veterinary Society. By the latter Society he was recently entertained as an honoured guest in commemoration of the fact that he had served the interests of the profession so loyally and well. A pupil of the late Mr. Cartwright of Wolverhampton, Mr. Trigger entered the profession at an early age, graduating from the London College in 1870. He then settled down in Newcastle-under-Lyme, where his ability and enthusiasm soon built up a very large consulting and general practice. As in the case of his Mayoral colleague, Mr. Penhale, the Board of Agriculture has secured his services as Veterinary Inspector and the value of his help and advice has been manifested in many outbreaks of disease.

Mr. Richard Penhale can safely be said to be one of the most popular men in North Devon. Popular alike with his profession and his fellow townsmen, his election to the Mayoral chair was not a matter of much difficulty, and his lengthy service on the town council has given him every opportunity to become fitted for the duties of the post. Born of yeoman stock, he inherited from his father a natural love for animals, and the Penhale family have given several hostages to the veterinary profession. The Borough of Torrington is a very ancient one, dating back from the reign of Queen Mary. The election to the office of chief magistrate is one of which Mr. Penhale may justifiably be proud.

That these two towns, the one in Staffordshire and the other in Devon, the citizens of which are engaged in totally opposite pursuits, will each have a level-headed counsellor to guide their affairs through the forthcoming year is a matter on which they may congratulate themselves in their respective selections, and we of the veterinary profession, in our turn, congratulate our colleagues.

General Articles.

A REPORT UPON 112 HORSES SATISFACTORILY TREATED BY THE NEW OPERATION FOR "ROARING" OR "WHISTLING."

By FREDERICK HOBDAY, F.R.C.V.S., F.R.S.E.

(*Formerly Professor in the Royal Veterinary College, London*), *Kensington, W.*

In the Veterinary Journal for January last (1910) I published an account of the ventricle stripping operation for "roaring" as described to me by Dr. Williams, the Professor of Surgery in the Veterinary Faculty of Cornell University, U.S.A.

On September 10, 1909, Dr. Williams came over to England at my request, and very generously gave a practical demonstration of the technique of his method of operating before a number of veterinary surgeons, the patients operated upon being two hunters belonging to clients of mine.

The animals passed through the ordeal satisfactorily, and were returned to their respective owners on October 10. Since then I have, in consultation with a number of members of the profession (to whom, especially Messrs. John Coleman, Sutton, Livock, D. Dudgeon, Manton, Grasby, Hazelton, Jagger, Healy and Ryan, I am indebted for the trouble they have taken in assisting me to compile statistics), operated upon nearly 250 cases (a number of which are still awaiting till sufficiently healed to be tested), and I propose in the present article to select and trace up to date 112 of them in which it can fairly be stated that the results are satisfactory. By the word "satisfactory" I mean satisfactory in the eyes of the owner and, usually, of his veterinary surgeon too. Some have even passed a veterinary test for soundness in wind, in others the word of the owner has been taken that the horse is now useful and able to work without distress; whereas before he was (in many cases) a useless beast for the purpose required.

In America the various operations for the relief of roaring have in recent years received a good deal of attention and the names of Liautard, Williams, Merrilat, Harger, and others have done much experimental and observation work on the subject.

In England, some years ago, Fleming, Axe, Fred Smith, Raymond, and various others attempted certain surgical methods, but soon dropped them as useless; and in France such master surgeons as Cadiot and

Bouley have devoted much time and thought to endeavouring to effect a cure.

In Germany Möller, and prior to him the two Günthers; in Italy, Bossi, and in Sweden Stockfleth, have all been workers at it at one time or another, but apparently no one has been able to demonstrate "up to the hilt" that any one method of surgical interference would command success in every case.

I do not pretend to be able to do this at present, as it is only fifteen months since I commenced my statistics, and I intend to wait fully two years before reporting absolutely definitely, but I do think a sufficient number are now under close observation (and that some have been done a sufficiently long time) to enable me to give to the profession some idea as to whether the ventricle stripping operation is of value or not. My opinion is that it is.

Certainly I have to some extent modified the technique of Dr. Williams's method of operating as described in the January VETERINARY JOURNAL of last year, in that I now strip *both* ventricles and at the same time do the whole operation *through the crico-thyroid ligament only*, without using a saw to cut the thyroid cartilage, nor yet the scalpel to cut the cricoid or tracheal rings, and for these two points I claim originality and consider that they are likely to increase very materially the proportion of successes, although a large number of the cases here reported have only had one vocal cord operated upon.

The special instruments necessary are modified from the original ones shown to me by Dr. Williams, but in principle are much the same, and I have to thank Messrs. Arnold and Sons for their courtesy and skill in making numerous patterns of retractors, forceps and stripping knives for my trial. The ones figured here are the ones I have thought the most convenient. They, and the swabbing forceps, with an ordinary scalpel and a couple of pairs of artery forceps, are all which are required, and the operation is practically a bloodless one.

Williams, in a paper read before the American Veterinary Medical Association at New Haven, Connecticut, in 1906, fully acknowledged to Günther of Hanover the hints he had obtained from the work this surgeon did in 1834, although he states that "the exact technique of these operations we have been unable to determine, but the results were quite unsatisfactory, and they apparently abandoned the effort."

That the Günthers essayed removal of one and both vocal cords respectively, and also resected the arytenoid cartilage, is certain, and

perhaps the mucosa of the ventricle; but, if so, why their efforts were unsatisfactory in the face of the results of the undermentioned cases I cannot imagine. It seems impossible that it can have been the same operation.

Retractor. Special knife. Operating forceps. Swabbing forceps.

The special instruments required.

I can only think that either they did not go far enough or else did too much; there may be a good deal in this last statement, for I am convinced that it is easy to make either fault. It is one of the most delicate of all the operations which the veterinary specialist is called upon to perform, and one in which the operator must do *just*

enough—to remove too little or to remove too much will be likely to lead to failure—as the object of complete closure of the ventricle and the subsequent adhesion of the offending vocal cord to the wall of the larynx, well out of the lumen of the larynx, will not be attained.

Naturally, as with every surgical procedure (in this as with all other operations), a veterinary adviser should have sufficient discretion never to promise a cure in *every* case, but I can now justifiably assert that this operation has given to the profession a method by which, at the very least, an amelioration can be promised in a very high percentage of cases, and that there is a prospect of a cure even sufficient to enable the animal to pass any ordinary veterinary test for soundness of wind. *The "useless" beast can, in a reasonable proportion of cases, be made "useful,"* and even if the noisy respiration does not entirely disappear, provided the horse can work without distress, an owner is grateful. No owner or groom likes a tube to be inserted if it can be avoided; it is too much trouble to keep clean, and too much of a nuisance for many other reasons, and even supposing the relief given is the same as when a tube is inserted, and a certain amount of noise remains, an owner is grateful if his horse can be enabled to work without distress.

The following are cases in which sufficient benefit has followed the operation to make it termed a satisfactory result. Some have been operated upon on the left side only, some on both, and I propose, at a later date, to compare the respective percentage of successes attained by each, and also to note whether it is advisable to try the effect of one side first, and then the second side at a later date if necessary, or to make a universal practice of doing both sides at one and the same time.

Case 1.—Bay hunter gelding, aged 10, a big upstanding horse. This horse was a bad whistler, and got very distressed when ridden uphill, or for any distance at a gallop. He was sent to have a tracheotomy tube inserted. The ventricle stripping operation, on the left side only, was performed on September 10, 1909, and on October 2, my partner, Mr. Sutton, F.R.C.V.S., lunged the animal in a field and reported to me that he could hear no abnormal sound at all. On the 9th the horse was ridden twice round a large field at a gallop and the sound emitted was only slightly abnormal. It was then sent home, and was gradually exercised until in hunting condition. On December 16 I received a letter from a friend of the owner stating: "I saw Mr. —— in the hunting field on the horse to-day, the first time out. He has not heard the horse make any sound so far. He seemed very delighted about it, and said that he looked upon it as a miracle." At the end of the season I got a very nice letter from

Number of case	Date of operation	Class of horse	Age	Sex	Description before operation	Condition of vocal cords.	Result on first trial	Present report
	1909							
1	Sept. 10	Hunter... ...	10	Gelding	Bad whistler ...	Left paralyzed ...	Excellent	Excellent.
2	,,	,, ...	9 or 10	,,	,, ...	,, ...	,, ...	,,
	1910							
5	Jan. 25	,, ...	7	,,	Bad roarer ...	,, ...	Much improved ...	Can gallop freely without distress.
8	Feb. 3	,, ...	10	,,	,, ...	,, ...	,, ...	Can gallop without distress, although makes noise.
								Second operation, Aug. 30.
10	Feb. 15	,, ...	6	,,	Bad roarer ...	Both moved freely	,, ...	Excellent.
11	,,	,, ...	8	,,	Bad whistler ...	Left paralyzed ...	Excellent	Practically cured, perhaps a little thick in wind.
18	April 1	,, ...	7	,,	Roarer	,, ...	Not very satisfactory	Satisfactory.
20	April 6	,, ...	...	,,	,, ...	,, ...	Good...	Satisfactory.
22	,,	,, ...	...	,,	,, ...	,, ...	Excellent	Excellent.
25	April 10	,, ...	6	,,	Bad roarer ...	,, ...	,, ...	,,
29	,,	,, ...	8	,,	Roarer	,, ...	Not good	Second operation, Sept. 29. Now satisfactory.
31	April 15	Racer	3	,,	Bad roarer ...	,, ...	Slight whistler, but no distress ...	Slight whistler, but no distress.
33	April 16	Hunter... ..	11	Mare	,, ...	,, ...	Satisfactory	Satisfactory.
35	,,	,, ...	7	Gelding	,, ...	,, ...	,, ...	,,
36	,,	,, ...	11	,,	,, ...	,, ...	Still very noisy ...	Second operation, Aug. 26, 1910. Much improved, and no distress.
38	,,	,, ...	9	,,	Whistler	,, ...	Improved	Improved.
40	,,	,, ...	5	,,	Bad whistler ...	Left moved slightly	Excellent	Excellent.
41	April 19	,, ...	8	,,	Confirmed roarer	Both moved freely	,, ...	,,

43	April 23	,, ...	7	,,	Bad whistler ...	Left moved slightly	,, ...	,,
44	,,	,, ...	9	,,	Bad roarer ...	Left paralyzed ...	,, ...	,,
45	April 24	,, ...	5	Mare	Bad whistler ...	Left moved slightly	,, ...	,,
50	,,	,, ...	12	Gelding	Bad roarer ...	Left paralyzed ...	,, ...	,,
51	,,	,, ...	7	,,	,, ...	,, ...	,, ...	,,
53	April 27	,, ...	7	,,	,, ...	Left moved slightly	,, ...	,,
55	,,	,, ...	9	,,	Bad roarer ...	Left paralyzed ...	Satisfactory	Satisfactory.
56	,,	,, ...	10	,,	,, ...	Both paralyzed ...	,, ...	,,
57	,,	,, ...	7	,,	Bad whistler ...	Left paralyzed ...	Excellent	Excellent.
58	April 30	,, ...	7	,,	Bad roarer ...	,, ...	Improved	Satisfactory.
64	May 4	,, ...	...	Mare	Moderate whistler	,, ...	Excellent	Excellent.
65	,,	,, ...	14	Gelding	Whistler	Left moved freely	Satisfactory	
67	,,	,, ...	...	Mare	Bad whistler ...	Left paralyzed ...	,, ...	Satisfactory improvement.
68	May 7	Van gelding ...	7	...	Bad roarer ...	Left moved slightly	,, ...	Satisfactory.
71	May 8	Hunter... ...	6	Gelding	,, ...	Left paralyzed ...	Temporarily better...	Second operation, Sept. 9. Excellent.
72	May 9	,, ...	8	,,	Roarer	,, ...	Not satisfactory ...	Excellent.
73	May 10	,, ...	16	,,	Bad roarer ...	,, ...	Excellent	,,
79	May 22	,, ...	12	,,	,, ...	,, ...	Not very satisfactory	Still some noise, but hunting without distress.
81	May 23	,, ...	...	...	,, ...	,, ...	Excellent	Excellent.
82	,,	Carriage ...	...	Gelding	,, ...	,, ...	Satisfactory	Satisfactory.
85	May 28	Harness horse...	9	...	,, ...	,, ...	Improved	Second operation, Aug. 3; now excellent.
87	May 30	Hunter... ...	6	Gelding	,, ...	,, ...	Excellent	Excellent.
89	June 1	,, ...	9	Mare	Roarer	,, ...	,, ...	,,
92	June 5	,, ...	9 or 10	Gelding	Bad whistler ...	,, ...	Not very satisfactory	Now satisfactory.
93	,,	,, ...	7	,,	Roarer	,, ...	Satisfactory	Satisfactory.
96	June 9	,, ...	15	,,	Bad roarer ...	,, ...	,, ...	,,
97	June 10	,, ...	9	,,	,, ...	Both paralyzed ...	Not satisfactory ...	Excellent.
98	June 11	,, ...	8	,,	,, ...	Left paralyzed ...	Satisfactory	Satisfactory.
100	June 12	Russian Orloff trotter	4	Mare	,, ...	,, ...	Excellent	Excellent.
101	,,	Russian trotter	4	Stallion	,, ...	,, ...	,, ...	,,

Number of case	Date of operation	Class of horse	Age	Sex	Description before operation	Condition of vocal cords	Result on first trial	Present report
	1910							
102	June 12	Racehorse ...	6	Gelding	Very bad roarer, been tubed	Both sides paralyzed	Satisfactory	Satisfactory.
106	June 15	Hunter	12	,,	Bad roarer ...	Left	Improved, but still makes noise	Second operation, Sept. 10. Now satisfactory.
107	June 16	Hunter	7	,,	Bad roarer ...	Left	Satisfactory	Satisfactory.
108	,,	,, ...	7	,,	Roarer	Left paralyzed ...	Exellent	Excellent.
109	June 17	,, ...	6	,,	,, ...	Left	Much improved ...	Satisfactory.
110	,,	Harness ...	6	,,	Bad roarer ...	,, ...	Satisfactory	,,
111	June 18	Hunter	10	,,	,, ...	Left paralyzed ...	Not good (2nd operation Oct. 20)	Now satisfactory.
115	June 26	,, ...	6	,,	Roarer	Left	Much improved	
116	June 27	,, ...	8	,,	Whistler	Left partly paralyzed.	Excellent	Excellent.
117	,,	,, ...	...	,,	Roarer	Left	Satisfactory	Satisfactory.
118	,,	,, ...	...	,,	Bad roarer ...	Both	,, ...	,,
119	June 29	,, ...	12	,,	Roarer	Left	Excellent	Excellent.
120	,,	,, ...	8	,,	Bad roarer ...	,, ...	,, ...	,,
124	July 2	,, ...	8	,,	,, ...	,, ...	Improved	Satisfactory.
126	July 5	,, ...	8	,,	,, ...	,, ...	Satisfactory	,,
127	,,	,, ...	9	,,	,, ...	,, ...	,, ...	,,
130	July 8	,, ...	3	,,	Roarer	,, ...	,, ...	,,
131	,,	,, ...	6	,,	Bad whistler ...	,,	,, ...	,,
134	July 11	Carriage ...	7	,,	Bad roarer ...	Both	,, ...	,,
136	July 14	Hunter	6	,,	Very bad roarer ...	Left	,, ...	,,
137	July 15	,, ...	8	,,	Bad whistler ...	,, ...	Excellent	Excellent.
138	,,	,, ...	7	,,	Bad roarer ...	,, ...	,, ...	,,
140	July 21	,, ...	6	,,	Roarer	,, ...	,, ...	,,
141	July 24	Hackney ...	5	,,	Bad roarer ...	,, ...	,, ...	,,
145	July 28	Hunter	4	,,	Bad whistler ...	,, ...	,, ...	,,
146	July 30	,, ...	7	,,	Roarer	Left paralyzed ...	Satisfactory	Satisfactory.
148	,,	,, ...	6	,,	Very bad roarer ...	Left	,, ...	,,
149	,,	Racer	5	Stallion	Bad roarer ...	,, ...	Excellent	Excellent.
151	Aug. 2	Hunter	8	Gelding	Bad whistler ...	Left partly paralysed	,, ...	,,

152	,,	,, ...	9	,,	Bad roarer ...	Left.	,, ...	,,
153	Aug. 3	,, ...	10	,,	,, ...	,, ...	,, ...	,,
160	Aug. 5	,, ...	6	,,	Slight whistler ...	Left partly ...	,, ...	,,
162	Aug. 6	,, ...	7	,,	Bad roarer ...	Left paralyzed ...	Satisfactory	Satisfactory.
163	,,	,, ...	6	,,	,, ...	Left	Excellent	Excellent.
167	Aug. 9	Carriage ...	9	,,	,, ...	,, ...	,, ...	,,
170	Aug. 12	Hunter	5	,,	,, ...	,, ...	,, ...	,,
171	,,	,, ...	5	,,	Bad whistler ...	,, ...	,, ...	,,
172	,,	,, ...	5	,,	,, ...	,, ...	,, ...	,,
173	Aug. 12	Hunter ...	5	Gelding	Bad whistler ...	Left paralyzed ...	Excellent	Excellent.
176	Aug. 20	,, ...	6	,,	Roarer	,, ...	,, ...	,,
178	,,	,, ...	Aged	,,	Whistler	,, ...	Satisfactory	Satisfactory.
181	Aug. 21	,, ...	5	Mare	Roarer	,, ...	Excellent	Excellent.
182	Aug. 22	,, ...	6	Gelding	,, ...	,, ...	,, ...	,,
183	,,	Shire	3	Stallion	Bad roarer ...	,, ...	,, ...	,,
185	Aug. 26	Hunter ...	9	Gelding	,, ...	,, ...	Satisfactory	Satisfactory.
186	,,	,, ...	4	,,	,, ...	,, ...	,, ...	,,
190	Sept. 8	,, ...	4½	Mare	Whistler	,, ...	,, ...	Excellent.
191	Sept. 13	,, ...	5	Gelding	Bad roarer ...	,, ...	,, ...	Satisfactory.
192	Sept. 14	Trooper ...	11	,,	,, ...	,, ...	,, ...	,,
193	,,	,, ...	7	,,	,, ...	,, ...	,, ...	,,
194	,,	,, ...	6	,,	,, ...	,, ...	Excellent	Excellent.
195	Sept. 17	Carriage ..	5	,,	,, ...	,, ...	,, ...	,,
196	,,	Hunter ..	12	,,	Roarer	,, ...	Satisfactory	Satisfactory.
197	,,	,, ...	8	,,	,, ...	,, ...	,, ...	,,
198	Sept. 18	,, ...	5	,,	Bad roarer ...	,, ...	,, ...	,,
199	Sept. 20	,, ...	12	,,	,, ...	,, ...	,, ...	,,
203	Oct. 1	,, ...	8	,,	,, ...	Left	Bad	Excellent.
204	Oct. 4	,, ...	9	,,	Roarer	,, ...	Satisfactory	Satisfactory.
205	Oct. 4	Pony	Aged	Gelding	Bad roarer ...	Left paralyzed.	Excellent	Excellent.
206	Oct. 7	Hunter	7	,,	Bad whistler ...	Left.	,,	,,
207	,,	,, ...	5	,,	Bad roarer ...	,,	,,	,,
208	,,	,, ...	5	,,	Whistler	Left partly paralyzed	,,	,,
214	Oct. 13	,, ...	7	,,	Bad roarer ...	Left.	,,	,,
216	,,	Harness ...	8	Mare	,, ...	,,	,,	,,

the owner, and only a few days ago (November, 1910) I received a further letter to say that he was riding his hunter again this season and that he was perfectly satisfied. His words were: "I was able to give the hunter a good gallop last Saturday, and I am glad to say that he still remains all right in the wind."

Case 2.—A bay thoroughbred hunter gelding 9 or 10 years old, operated upon on September 10, 1909. This animal whistled badly and got very distressed, even when walking fast or trotting slowly uphill. On October 2, he was lunged severely by Mr. Sutton, who reported that he could hear no abnormal sound. On the 9th he was ridden twice round a field without distress, and on the 10th he was sent home into Somersetshire. On the 11th, the owner, in acknowledging his return, said: "He makes no noise at all as he used to when coming up Porlock Hill from the station," and Porlock Hill is, I understand, one of the steepest in England. On the 23rd, I got a note to say, "He can now trot uphill, which he could not do before his operation, without making a sound. We all think him cured." During the summer he was used as a hack and he has carried his owner this season through the Devon and Somerset country stag-hunting, and, more recently, foxhunting.

On October 4, 1910, I received a note to say: "I had the horse out with the foxhounds and he went awfully well. He makes no noise." I have received another letter this month (December) to say that the horse has been ridden "up some hills so steep that it is quite a scramble to get up, and he does not make the very smallest sound."

Case 5.—February 29.—Galloped in riding school. Still makes a noise, but gallops freely without distress. Owner and groom very pleased.

April 8.—Owner expressed great pleasure at result.

August 10.—Tested horse again myself. He now makes a peculiar blowing sound, but gallops freely without any distress, and the noise ceases at once when pulled up.

Case 8.—From a letter received this month (December) I quote the following: "I am very pleased to be able to tell you that my bay horse is going hunting regularly in his turn. He still, of course, makes a noise, but *much* less than formerly; and I ride him with discretion in hilly parts of the country, but on the flat he gallops and jumps in his old form."

Before operation the description given by the owner was that the horse had been first noticed to be a "whistler" at 4 years old. In 1909 he was such a bad roarer that he could not be hunted, as it was impossible to gallop far. He would usually fall down owing to dyspnœa at about the third fence.

Case 10.—May 29, 1910.—Galloped hard and tested all ways by a well-known hunting veterinary surgeon in the presence of three other veterinary surgeons. Grunted sometimes (not always) when "taking off" at jumps, but otherwise galloped well, and was not at all distressed. No sound was heard by any of us when the horse galloped past, but the veterinary surgeon on the animal's back said he could occasionally hear a "slight wheeze" when the head was turned sharply to the left in the "figure of eight" test. The scar was imperceptible unless closely looked for.

Case 18.—In December I received a letter from the owner, from which I quote the following: "The horse still makes a slight noise but nothing in comparison to last year before you operated. It stops him *slightly*, especially in the present heavy going, but you may judge of the difference by the following: Last year I rode him once with the staghounds; he was very much distressed and I could not keep him to the front at all. This year I have ridden him three or four times with the staghounds, good runs, longer and as fast as the one of last year, and he has gone well, keeping well up to the front and 'coming home on his toes.' He is quite a different horse in himself, he has filled out and keeps his condition, feeling well after hunting. He is also a different horse to ride and seems to move more strongly and is keener with hounds, although the going is, as you know, very deep at present."

Case 22.—In December I received a note from a friend of the owner, who had seen the horse in the hunting field several times, to say that the horse had made a noise when it was first taken up, "but it has steadily improved, and continues to do so. Instead of being poor in condition, slack, and lifeless, as before the operation, it is now fat, and quite brisk and lively, and in regular work."

Case 25.—On August 26, the owner wrote: "I am very pleased to tell you that I am delighted with the result of the operation. I have had the horse galloped this afternoon and am surprised at how slight a noise he now makes. If you were not looking out for it I do not think you would hear anything abnormal." In December of this year this horse was submitted to a test for wind by one of the best known hunting veterinary surgeons in the three kingdoms, and the following certificate was given:—

"*December* 8, 1910.

"This is to certify that I have this day examined a bay gelding, six years old, in height about 16 hands, and that the said gelding is in my opinion sound.

"———, M.R.C.V.S."

Case 29.—This horse had been tubed for five months and had a lot of granulation tissue in the trachea. The owner expresses himself at the present time as well satisfied with the result.

Case 31.—This colt was a bad roarer before the operation, and on November 18, 1910, I received a letter from which I quote the following:—

"I am sorry I have not written you before. H——'s colt is still a distinct whistler, but is much improved; no one would pass his wind as sound, yet it does not interfere with him now, whereas before he could not gallop round the paddock.

"———, M.R.C.V.S."

Cases 33 and 35.—In December I received the following communication: "My mare still makes a noise, more than before operation, but is unquestionably relieved and much less distressed than before it. Whereas she was of so little use last year as to be not worth keeping, she can now be easily nursed through an ordinary hunt."

Captain T—— tells me the same of his horse—that the noise is increased, but the distress lessened.

Case 36.—The owner writes: "The noise is a different sound and much less. He is twice the horse he was before operation."

I operated a second time on August 26, and from a letter received in December I quote the following: "I have only hunted the horse you operated on for me twice. I have not had him properly fit, but certainly the noise was very greatly lessened. He used to be very audible when trotting: now you can hear him cantering, but not very much. I think it improved his staying powers considerably, but owing to his legs having gone wrong, I am unable to speak as definitely as I should like. That the noise is *greatly ameliorated* I do know, and the second operation much reduced the noise after you heard him. I should put it that the first operation lessened the noise by two-thirds, and the second by two-thirds to one-half of that, so that the final result is that he makes about one-sixth of the noise he originally did. I should certainly repeat the experiment if any horse I liked became a bad enough roarer to make him apt to get unduly distressed."

Case 38.—From a letter received in December I quote as follows: "The 'Nigger' does not make nearly so much noise. Previous to his operation he never seemed to be stopped by his wind, and it does not stop him now. On the whole he has been improved by the operation."

Case 41.—A quotation from a letter received on December 5 states: "Mr. S——'s horse, on which you operated in April last, is, by his owner, considered sound.

"————, M.R.C.V.S."

Case 44.—I quote from a letter dated December 2, 1910: "You will remember that Mr. G——'s horse made a lot of noise and had done so several seasons. Mr. G—— tells me that he considers him to be sound in his wind, and he is a very good judge.

"————, M.R.C.V.S."

Case 45.—In November the owner wrote: "The horse is hunting regularly. I would not like to guarantee the animal as actually 'sound,' but he is 'sound enough' and satisfactory. I am delighted."

Case 53.—An extract from the owner's letter, dated November 22, says: "I thought you might be interested to hear that the bay gelding you operated upon for wind for me has turned out a complete success. Our veterinary officer cannot find that he makes any noise, nor can I. I rode him in the heavy weight point-to-point here, 3½ miles over big fences, and he ran a dead heat for first place in fair company. He is pretty fit—in fact, quite as fit as you can expect, considering that he was not especially prepared in any way for the race, and all he does is to exercise and hunt once a week. I left him in a big box all the summer, and took him up on August 14, and he is now very well and fit."

The veterinary officer, who examined the horse, also wrote me as follows: "I am glad to say that I consider the operation on B——'s horse to be an absolute success. I have ridden him myself and tried him in every way (long gallops, short gallops, up hill, and cantering), and he makes no noise at all. I saw him win the point-to-point, 3½ miles." He enclosed the following certificate:

"I hereby certify that the bay hunter gelding, the property of B——, Esq., which was operated upon in March, 1910, for whistling, now makes no noise in his work.

"————, M.R.C.V.S."

Case 55.—This horse had been "tubed" for five months. In November the owner stated:—

"I am very pleased with the result, and should certainly have another roarer operated upon if I had one. The horse still makes a little noise, but nothing like he did before with the tube, and he does his work satisfactorily."

Case 57.—On September 19 the owner wrote: "I am writing to tell you that I think the brown horse is cured."

Case 58.—From a letter received from the owner in December, I quote as follows: "'Major Mick,' the horse first operated on, is not a 'cure,' but is very much improved. I have been laid up, but the other day I had an hour and a quarter on him; his wind did not affect him, and I should say that the operation was worth the money to a horse of his type."

Case 64.—This horse was purchased as a whistler for £20, and was subsequently sold for £200 a few months after the operation, being passed by a veterinary surgeon.

Case 68.—A letter dated October 10 stated that the horse had been sold and was working all right, and that the man who drove the horse (a very knowing fellow!) said that he had never noticed the slightest defect in wind.

Case 72.—On November 19, 1910, I received the following letter: "You asked me to let you know how the horse you operated on for his wind in the summer went on when hunted, and I am glad to be able to tell you that he has improved wonderfully. You cannot hear him at all trotting now, and although when galloping he still makes a noise, it is nothing compared to what it used to be, so that I am very glad I had it done."

Case 73.—On October 17 I received the following letter: "The result of the operation is a perfect cure. The owner is delighted at the splendid recovery the horse has made. He makes no noise in his gallops, and I think you may consider it an absolute success.

"————, M.R.C.V.S."

Case 79.—In December I received a letter from which I extract the following: "The horse you operated on is hunting regularly. He makes a noise when pulling, which he seems to do more than he previously did, also in deep land. At one time I thought he made very little noise at all. There is no doubt that he much improved on the year before."

Case 81.—On November 28 I received the following letter: "I am sorry I have not written to you before with reference to the horse you operated upon for me, but I thought I should like to be quite certain before I gave you my opinion. I am now practically sure that the horse is cured; so far as I believe I could sell him as sound, though I have not, up to the present, submitted him to a veterinary examination. I hope you have had equal success with others."

Case 85.—On September 13 I received a letter: "The bay horse is greatly improved. I cannot hear him whistle at all in harness, even when driven sharply up hill. Before his first operation he roared very loudly, and before the second he made a good deal of noise in doing exactly the same hill at the same pace he does now without making any noise. I drive with rubber tyres, and should hear the noise if he made any.

"————, M.R.C.V.S."

Case 87.—On November 27 the owner wrote: "You will be glad to hear that the horse is now perfectly sound in his wind, and I have been hunting him regularly. Of course he still grunts, unfortunately, but nothing could alter that. It also requires a strong imagination to find the mark of the scar, even knowing where it is.

He also enclosed the following veterinary certificate, dated December 6: "I am glad to write that I do not detect any unsound noise in your horse's inspiration, either in slow or fast paces.

"————, M.R.C.V.S."

Before operation the horse could not gallop three times round a well-known London riding school without great distress.

Case 92.—A letter in December said: "The horse has improved a good deal since I wrote you in September. Although he still makes a good deal of noise it does not seem to stop him as it used to. I may perhaps consider the question of the second operation at the end of the season."

Case 98.—"'Goliath,' the 17.3 bay, I have not galloped out myself, but my nephew and groom have both ridden him and they say they can hear nothing; presently I will have him tried and send you vet.'s report."

Cases 137 and 138.—On December 26 I received the following report: "Both the cases are a success, if not complete are perfectly satisfactory, and in each case a previously useless hunter is restored to good working order.

"——, M.R.C.V.S."

Case 151.—On October 18 I received the following reports:—

The owner wrote as follows: "My horse, 'John Peel,' has been at walking exercise six weeks, and trotting exercise three weeks, and last Saturday I took him out cubhunting, and although he had never had a canter (beyond 100 yards), I got Mr. H—— to get on him and try him for his wind. He took him about two miles 'full bust,' and, I am delighted to say, he says he is 'sound in wind,' though he can still make him grunt, as he *always* did. What successes in other quarters?"

The veterinary surgeon whom I met in consultation over the operation wrote on October 16 as follows: "I galloped the bay hunter to-day belonging to Captain ——, operated on August 2, and gave him a good gallop of one mile and a half. I find this horse going sound, and, in my opinion, perfectly sound in his wind. This horse does not blow or make any noise, and I consider this a very satisfactory result. I rode the horse myself, and as I ride 15 st., I consider this quite test enough. He still grunts at the stick.

"————, M.R.C.V.S."

Case 152.—"December 28, 1910. I have not had the opportunity of galloping Captain W——'s horse, but I have seen Mr. E——, and he says that Captain W—— has given this horse a strong gallop of three miles, and he could not hear any noise.

"This horse was a pronounced roarer, and I should say that this case could be classified amongst your successful ones.

"————, M.R.C.V.S."

Case 153.—On November 4, 1910, I received the following report from the veterinary surgeon whom I met in consultation over the operation: "I have not had a chance to try him in a gallop till

Tuesday last. We were out hunting, and I galloped side by side with him for a considerable distance. I could hear very little, so slight that I think when he is fit it will be imperceptible; he grunts a little at the stick, but nothing like he did. There is no doubt it is a wonderful improvement in this case, as before you could hear him roaring a considerable distance away.

"————, M.R.C.V.S."

CASE 105.—From a letter dated December 27, 1910, I quote: "Mr. D——'s is certainly improved, and also since you last saw him; he is at regular work hunting, and as you know the ground has been very trying. He still makes a distinct noise and grunts, but can 'go on' with it.

"————, M.R.C.V.S."

CASE 106.—The following extract is taken from a letter written on December 27: "I gave this one a good 2½ miles gallop full speed last Thursday, and he did it alright. He still makes a distinct noise. At first, after the second operation, they were very disappointed, and he could not go any distance, but a *very great improvement* set in as the horse was conditioned. He was hopeless to 'class' last year, but he is a fine steeplechaser, and my opinion is that he will do his four-mile course (and I hope win) this season, so long as the ground is not too deep at the time. After his 2½ miles he was not at all distressed, and the noise ceased in just under thirty seconds (by the watch).

"————, M.R.C.V.S."

CASE 108.—A letter dated January 1, 1911, states: "I think your operation to my bay hunter is a complete success. I have only hunted him twice, but at the present moment I am very pleased with the result. He is practically noiseless in his trot and canter; in his gallop you can still hear a bit; he is, I consider, in better condition and freer in his work."

CASE 109.—From a letter dated December 27, 1910, written by the veterinary surgeon whose patient the horse originally was, I quote: "Mr. W——'s horse is much improved but I believe has been sold in consequence of W—— giving up hunting, so cannot trace him now.

"————, M.R.C.V.S."

CASE 111.—January 1, 1911: "The horse was not put with any work until Wednesday last, and I had a gallop on him this morning. There is a great improvement: He is now a useful horse and can keep going. I galloped him as hard as he could go for a good mile. After the first operation and with a similar gallop he had to stop, but to-day I had to pull him up, and he could have gone on quite comfortably. The noise is not nearly so pronounced and does not increase when the horse is pressed. I am hopeful that there will be still more improvement as the horse gets condition. However, B—— has now got a useful horse where before he had an animal that was only fit either to tube or shoot.

"————, M.R.C.V.S."

CASE 117.—From a letter dated December 27, 1910, I extract the following: "As to the success of the operation: After I had got him fit you could hear very little noise, in fact none, unless the going was heavy, on our ordinary days' hunting. It would distinctly be audible in a point to point and would stop him a bit. The improvement is

enormous on last year, when he was hardly fit to hunt. Last week I galloped into a bog and he nearly drowned, as his head got underneath him for quite a minute, and I was very much afraid that he might have torn away the adhesion in his struggles. However, I hunted him all day yesterday through two good runs; not very fast, but one was a six mile point to point in about forty-five minutes, and I did not hear him."

Case 118.—December 28, 1910: "I have delayed writing to report upon the big horse, upon which you operated in the summer, until I had given him a good trial, and it was not until a very short time ago that I dropped into a gallop with him, which was good enough to try him. I was intending to let you know about him when the pressure of Xmas writing was over, and found your letter on my return home late this evening. The horse has very much improved since I spoke to you through the telephone; he makes much less noise than he did then; in fact, when not pressed on the flat and in good going he makes very little. In deep going, though, when pressed he still makes a certain amount of noise, and he does not manage a hill very well. However, the horse does not get distressed, is very keen, and I can see a hunt on him now. He is a very different horse to last season, when he could not go two fields in the deep ground. If the horse continues as at present to the end of the season I shall consider that it was quite worth while having the operation done. Lady V——, who is hunting from here, tells me that the result on her horse has been very much the same as on mine."

Case 145.—"December 28, 1910. I myself rode Mr. L——'s 4-year-old about a fortnight ago, and with the exception of grunting at times he is otherwise alright, and no day or long gallop is too much for him. If I had been examining Mr. L——'s horse and had not known he had been operated upon, I certainly should have been suspicious about his wind, because when riding across ridge and furrow he grunted a bit, and also when turning or suddenly pulled up, but I could not detect any noise directly he was pulled up. I should certainly say that this case was a success.

"————, M.R.C.V.S."

Case 146.—"December 29, 1910. The horse you operated upon is not cured, but undoubtedly better, and I have hunted him without hearing much noise or him getting distressed."

Case 167.—This horse belonged to a well-known firm of jobmasters, and was returned to them as too noisy in his work and distressed when pressed.

In December a report received stated that the result was quite satisfactory, and that the horse had now gone away again on job without any complaint being received or defect in wind observable.

Case 170.—The owner of this horse had refused £150 for the animal as a two-year-old, and £300 at 4 years. The beast became a bad roarer and was now valued at £20.

On October 28 I received a letter from which I extract the following: "You will be pleased to hear that Mr. R——'s horse is a great success. I examined him almost two weeks ago, and he is now practically a sound horse—a slight wheezing noise can be barely heard. You'll remember he was a roarer and a bad grunter. He doesn't grunt now. He used to grunt badly from a stick, or over his fences. I put

him over a number of fences and "not a murmur." He makes a slight sound from the stick.

"————, M.R.C.V.S."

On November 16 I received a further communication—"The operation has been a great success."

Case 171.—On October 10 I received a note from the veterinary surgeon whom I met in consultation over the case to say that the animal had been galloped in the presence of the owner and himself, and that neither of them could detect any unsoundness in wind. The animal had run away on one occasion since the operation—a thing which was impossible for any distance before, as previously he would speedily have "choked down" for want of breath.

Case 172.—The owner of this horse was so delighted at the result that he bought two more roarers on the first opportunity, and has since had them operated upon.

Case 173.—On October 10 this horse was tested in every conceivable way in a large park in the presence of four veterinary surgeons—at a gallop on the straight, in a circle (each way), and figure of eight. The groom who rode the horse said that the animal could not possibly have done the tests prior to operation. There was no noise at all at the trot or canter, but after above five minutes' gallop we could hear a slight "blowing" sound, but the horse moved freely and without distress, and upon being pulled up settled down within two minutes. Since then, on November 14, I have received a note from one of the veterinary surgeons who was present at the test, to say that now the horse is in better condition this has greatly improved, and the owner is perfectly satisfied.

Cases 176 and 178.—This month (December) I have received the following report from the veterinary surgeon whose patients they were: "Major B——'s horse is decidedly better, and is hunting regularly. Major M—— reports that his horse is cured.

"————, M.R.C.V.S."

Cases 182 and 183.—From a letter received on December 12 I extract the following: "The bay hunter and the Lincolnshire cart horse have both been galloped and neither make any noise. I can detect a slight roughness in the respiration, but had it not been known that the horses had been operated upon no notice would have been taken.

"————, M.R.C.V.S."

Case 190.—On November 10 the owner reported: "I have galloped the mare, and consider her perfectly sound in wind."

Case 191.—This horse was a little suspicious in regard to his wind even as a foal, but after a severe attack of strangles at four years old became a bad whistler, and now was described as a rank roarer. On December 22 I received the following report: "The grey is in most beautiful condition, he gallops very strong and free, and can stay well, but he makes a blowing sound like wind coming through an inch pipe."

Cases 192, 193, and 194.—On December 27 I received the following letter from the veterinary officer in charge of the cases:—

"I galloped the three horses last week. The old horse (Case 192) is better, but still makes a certain amount of noise; the 7-year old (Case 193) is much better, but still there is no doubt about his wind; the 6-year old (Case 194) I could not get a sound from.

"To sum up, my opinion is this: all the horses are very much better, and are now quite able to do hard and fast work, which they were not able to do before the operation, and it seems to me that the younger you can get them the more chance of a complete cure."

Cases 196 and 197.—On November 28 I received the following report from the veterinary surgeon whose patients they were:—

"I saw Mr. C——, the owner of one of the horses to-day, and he said he hunted his horse last week, and in a very heavy going and a long gallop. He said the horse was 80 per cent. better, so that is satisfactory. I will see A——, the owner of the other horse (the bay) in a few days and let you know. He is very pleased.

"————, M.R.C.V.S."

In a further letter from the same veterinary surgeon, dated December 22, 1910, the following communication was made regarding the first horse mentioned above: "Mr. C—— continues to be more than pleased about his hunter."

Case 198.—On October 18 I received the following letter:—

"I am writing to tell you that I sold my bay horse for £50 to Mr. L——, whom I am staying with here.

"I am looking out for the same type of horse again, and will bring him along to you if I find one." This horse was bought for £20 five weeks previously and was a bad roarer.

Case 198.—Since then (December) I have received the following note from the present owner: "The horse is not absolutely silent, but he is so much improved that he can give me a good day's hunting without distress. I could not warrant him sound, as he grunts to a stick, but for all purposes, bar selling, I should call him sound enough. I have not got him as fit as I could wish, for the hunting has been so very heavy that I have had rather to nurse him, but if the country dries up a bit soon, I hope to have him fit for a point-to-point, unless I sell him before."

Case 199.—"December 28, 1910. The black horse makes very little noise now, if any. He is improving in condition.

"————, M.R.C.V.S."

Case 203.—On November 18 I had a letter to say that the horse made more noise than ever. I replied advising to give the animal several good gallops, and on December 4 I received the following satisfactory report:—

"You will be delighted to hear the bay gelding was in a run of 60 minutes on Monday and never made the slightest noise.

"————, M.R.C.V.S."

Case 205.—This pony was such a bad roarer, and so much distressed in his work, that on two separate occasions the owner was stopped in the street by bystanders and requested to take it out of the shafts, and on a third occasion he was warned by an inspector of the Royal Society for the Prevention of Cruelty to Animals that he would be prosecuted if seen working it again. To trot or gallop was impossible. After the operation, on December 17, I received the following report: "The pony appears quite sound now. He has been at work for the last three weeks, and I gave him a gallop last Tuesday. He makes no noise.

"————, F.R.C.V.S."

Case 216.—This mare had been "tubed" some two years before, and was a bad roarer, being very distressed if pressed in her work. On December 5 I received the following: "The roan mare that you operated upon some two months since for 'roaring' is now perfectly sound in wind; she takes her turn with the others, her condition is better now than it has been for two years past—in fact, it is a perfect success in every way. I drove her nine miles last Friday and did not spare her, either up or down hill, and I could not detect the slightest noise; previously you could hear her twenty yards away.

"————, M.R.C.V.S."

Concluding Remarks.

It is not my intention in this article to enter deeply into the hundred and one side issues which affect "roaring." The subject of the respective parts played by heredity, strangles, and other causes, the actual reason why "roaring" is produced, the reason why the left side should primarily be affected, and many other things, are each worthy of an article to themselves, respectively. Suffice it to be able to assert at the present time that we have now attained a position from which the positive assertion can be made that the distressing disease known as "roaring" can be ameliorated and in some instances completely cured. At any rate, a useless beast can be made useful, and this, not in isolated cases, but in a very high proportion of instances; this conclusion is one which can, beyond dispute, be drawn from a perusal of the above extracts, which are here published without elaboration, being the criticisms and opinions of the owners themselves.

In the above tables and details the first 216 consecutive cases are taken, carrying me down to October 16, 1910, a date as far as it is fair to go considering that the patient is given some two months' rest after the operation. 112 cases are reported upon and may fairly be said to be satisfactory, as in every instance the owner has been pleased, and this represents a little over 50 per cent., but this does not by any means represent the fair proportion of successes; it will really work out very much higher when the statistics are complete.

From a number of owners I have not yet had replies; as probably they are abroad and I ought to have given them longer notice, but many of them have sent horses of friends for operation since their own was done, and *in no single instance*, out of 248 cases operated upon to this date, has there been any unpleasant letter or remark from an owner on the result. The worst which can happen is that the horse must be "tubed," and that would already have had to be done, in the majority of instances, had not the operation given relief.

My own impression is, and I have some experience now to "back up" my opinion, that next hunting season will see these *ci-devant* roarers "pull out" better in wind than they are this year, and I am certainly of opinion now that the proper procedure for an owner to adopt is to have his horse operated upon at the end of the one hunting season and forget him until the beginning of the next.

Two clear months rest, although by no means essential, is the wiser method to ensure success and allow a firm adhesion of the paralysed vocal cord to the wall of the larynx, and also some absorption of the thickening necessarily produced.

Time alone will show whether these ideas are correct or not, and I shall certainly trace the above group of horses through the second and perhaps even through a third year. At the same time, as several owners have remarked, if by this operation we can only give an old favourite one more season without a tube, it is worth doing. That this can be done is an established fact and well past the experimental stage, and as several reports have said, it gives more than a "sporting" chance of converting a "useless" beast into a useful one.

THE SERUM TREATMENT OF PULMONARY AFFECTIONS IN THE HORSE.

By C. H. H. JOLLIFFE, F.R.C.V.S.
Veterinary-Captain, 1st Life Guards.

Indexed B. A. I.

HAVING recently had some limited experience of the serum treatment of this prevalent and frequently fatal class of disease in equines, and having been more than satisfied with its results, I venture to publish a few notes on the subject in conjunction with clinical reports of some of the cases so treated, bearing in mind due caution and reserve necessary where only small numbers apply.

The sera employed have been "influenza antitoxin," prepared by Messrs. Parke, Davis and Co., and an "antipneumonic serum" obtained from Holland. The former has been used in five cases, and the latter in seventeen. In none of these twenty-two cases has there been a fatal result. Some of the cases have been only slight ones, and would doubtless have recovered under no such treatment. Others, on the contrary, have been very serious cases (*e.g.*, Nos. 8 and 9), showing all signs of probably taking an unfavourable course: and on the whole, judging from my own limited experience up to date, there seems good reason to suppose that both these sera, if *given early* and persevered with, and associated with favourable hygienic conditions, possess a distinct influence in increasing the patient's resistance to the bacterial invasion of which he is the subject.

The sera have been employed in all classes of pyrexial illness of an influenza, strangles, and catarrhal fever type. In some the infection has subsided without further complications; in others pulmonary or pleural implication has subsequently supervened, whilst in others, again, there has been undoubted physical evidence of grave pulmonary lesions from the commencement of the treatment and every indication for a very guarded or even unfavourable prognosis. In all, as already stated, recovery has resulted. A few examples from each variety of case have been selected, and full clinical details of these,

together with charts of temperature, pulse, and respiration, are appended.

The "influenza antitoxin" is issued in 30-c.c. vials, and is intended for intravenous injection. Full instructions as to dosage and technique accompany each vial.

The "antipneumonic serum" is a Dutch product that has recently been on trial in the Army Veterinary Service. It consists of two sera, known respectively as "A" and "B." The two sera are directed to be subcutaneously injected in 10-c.c. doses on alternate days, commencing with the "A" serum and continuing the alternate administration daily, according to the requirements of the case. From information kindly furnished me by Major O. C. Newsom, A.V.C., I understand that these (Dutch) sera are obtained from the blood of horses hyperimmunized against bacteria said to be associated with equine pneumonia, an ovoid organism being used in the case of the "A" serum, and a bacillus in the case of the "B" serum.

Adopting all ordinary antiseptic precautions, I have never seen the slightest trace of ill-effect either from the subcutaneous or intrajugular injection of any of these sera. In the case of the latter injection it is more than advisable to shave the skin over the site of injection, and, either by the application of tinct. iodi. or other method, to render it as nearly aseptic as possible, whilst the syringe, needles, and any vessel into which the fluid may be transferred for the purpose of filling the syringe should be rigorously sterilized by boiling immediately before use, and every care taken to prevent their subsequent contamination.

In conclusion, it may be stated that the writer has entirely given up the forcible administration of the usual "fever drenches" (stimulants, diaphoretics, febrifuges, &c.) generally prescribed in cases of this nature, and, judging by results, he is becoming more convinced as time goes on that patients fare just as well, and probably a good deal better, without any such treatment.

In the first place, I am extremely sceptical as to whether drugs of this kind really possess any genuine therapeutic value at all.

In the second place, the fact of forcibly pouring a distasteful liquid down the unwilling throat of a resistant and struggling horse, already weak and ill, is bound to have an undesirable effect; to be, in fact, positively harmful, and should only be justifiable where the medicine administered is most urgently and *definitely* called for. We all know that every horse resents being "physicked"; the process probably

doubles his pulse and respiration every time, and must of necessity irritate, excite, and distress him—all obviously injurious factors—whilst if he is additionally the subject of pulmonary disease and dyspnœa, not only are these evils increased tenfold, but it is also more than likely that if the "drenching" is persisted with—no matter how carefully—some portion of the liquid will from time to time find its way into the respiratory passages and so add fuel to the fire which it is our aim to extinguish.

Thus, in the opinion of the writer, it is by no means difficult to aggravate a horse's illness and oppose his powers of resistance, or natural efforts at recovery, by "excess of treatment," and I consider that the practice of "drenching" horses affected with pulmonary and allied diseases is a thing to be most emphatically discouraged, and would suggest that we should do well in all cases of this description to confine our materia medica to the utmost limit to such agents as may be given in solution in the drinking water, smeared on the tongue as an electuary, or injected with a hypodermic syringe; an occasional "bolus" being also permissible if very definitely indicated. Above all, as need scarcely be added, should we urge the supreme necessity of perfect rest, roomy and hygienic surroundings, and abundance of fresh air, insisting at the same time on the vast superiority of a pure, though cool, atmosphere (even at the risk of that terrible and mysterious bogey, a draught!) over one that is warm but vitiated. The latter is at all times beloved of the average stableman, but never more so than when his horse is "sick."

It is the writer's practice to place all cases of existing or threatened pulmonary disease in the largest loose-box available, to leave all windows wide open day and night, and, with the exception of generally applying a counter-irritant to the chest, to *worry* the patient to the least possible degree.

Under such conditions I venture to believe that a considerably higher proportion of recoveries is obtained than occurs where the practitioner directs that the patient must at all costs be kept in a "thoroughly warm atmosphere" and have the "fever medicine" regularly and frequently administered.

As to isolation in this class of case, there can be no doubt that all modern veterinarians unanimously advocate this course.

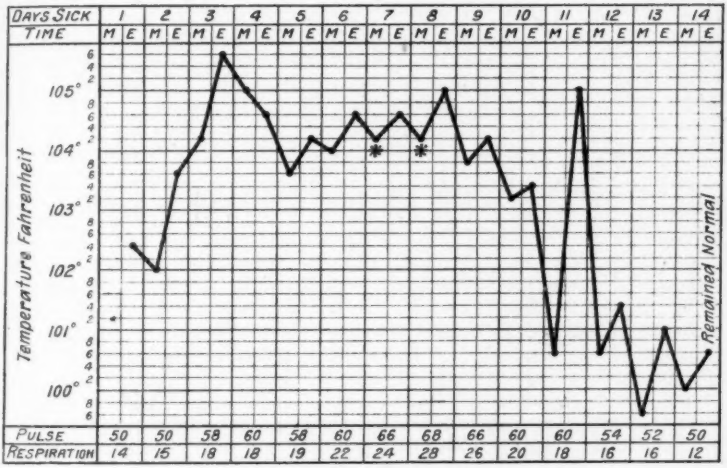
Case 1.—Troop-horse A 32; gelding, aged 3.
Disease.—Strangles (streptococcic catarrhal fever).
Treatment.—Parke Davis's influenza antitoxin by intravenous injection. *Admitted*, March 10, 1909; *discharged*, April 8, 1909. Cured.

Admitted evening of March 10, 1909; feeding badly, looking dull, and nasal discharges.

March 11.—Feeds moderately; slight submaxillary enlargement. Considerable bilateral nasal discharge. Physical examination of chest normal.

March 16.—Temperature remains high. Has been feeding badly. Spends much time lying down. Otherwise no further developments. Skin shaved and disinfected, and 30 c.c. influenza antitoxin aseptically injected into jugular vein with a sterilized syringe.

March 17.—Feeding better. Copious thick, white muco-purulent nasal discharge continues. Submaxillary enlargement shows slight increase; there is some tenderness and slight swelling over the laryn-



CASE 1.—Troop horse A 32, gelding, aged 3.

Treatment.—* 30 c.c. Parke, Davis & Co.'s influenza antitoxin by intrajugular injection.

geal region and upper end of trachea. A further 30 c.c. influenza antitoxin intravenously injected.

March 18.—Feeds well; otherwise no change. General appearance is bad, though physical signs are favourable.

March 20.—Progressing favourably. Physical examination of chest remains normal. Less nasal discharge.

March 21.—*Vide* chart. There is no change in general condition and nothing to account for last night's rise in temperature.

March 28.—Favourable and uneventful progress has been maintained. Submaxillary enlargement scarcely perceptible; swelling over laryngeal region has disappeared; nasal discharge has practically ceased, and horse's general condition is normal in every respect.

April 8.—Discharged cured, for very light duty, after an uninter-

rupted convalescence. Microscopic examination of nasal discharge showed quantities of cocci, both single and in chains.

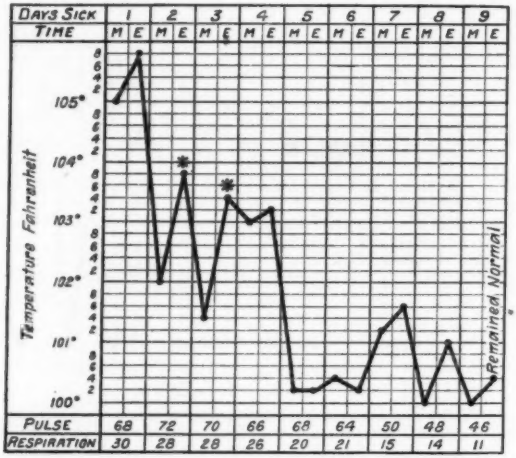
Case 2.—Troop-horse D 52 ; gelding, aged 5.

Disease.—Pleurisy with effusion, right side.

Treatment. — Parke Davis's influenza antitoxin by intrajugular injection. *Admitted*, March 23, 1909 ; *discharged*, April 19, 199. Cured.

March 23.—Reported to have left most of feed the previous night and to have eaten nothing this morning. Is "blowing," looks dull, and temperature found to be 105° F. Pulse frequent and weak. Conjunctivæ injected. Physical examination negative.

March 25.—No improvement. Feeds badly. Coughs occasionally. No nasal discharge or submaxillary enlargement. Physical examination shows indistinctness of vesicular murmur lower half of



Case 2.—Troop horse D. 52, gelding, aged 5.

Treatment.—* 30 c.c. Parke, Davis & Co.'s influenza antitoxin by intrajugular injection.

right side and some questionable dulness to percussion. Otherwise normal ; 30 c.c. Parke Davis's influenza antitoxin injected into jugular vein.

March 26.—Physical examination shows loss of vesicular murmur lower half of right side, and well-marked dulness to percussion over lower third. Front and left side normal. Diagnosis: Pleurisy and hydrothorax right side. Respiration accelerated and pulse weak. Feeds very badly. Bowels constipated. Aloes ʒiv. administered; 30 c.c. influenza antitoxin injected as yesterday.

March 29.—Has been purging freely, and to-day shows slight abdominal pain, and general appearance not favourable, though physical signs indicate improvement. Dulness to percussion is less marked, respiration is better, pulse improved in tone and

reduced in frequency, and conjunctiva good. Feeding slightly better.

March 30.—Diarrhœa continues. Spends much time lying down. No evidence of abdominal pain since yesterday. On physical examination, vesicular murmur is distinctly audible over lower part of chest (right side), and dulness to percussion is scarcely apparent over this area. The rest of chest remains normal. Mixture containing creta. prep., p. catechu, sp. ammon. arom., and tr. opii administered as a drench in thin flour emulsion.

March 31.—Shows much improvement. Diarrhœa has ceased. Feeding well. Temperature, pulse, and respiration normal. Physical examination shows no abnormalities except some very slight and ill-defined dulness to percussion lower fourth of right side.

April 19.—Subsequent course entirely favourable. Discharged cured, to have nothing but lightest exercise for the next few weeks.

Case 3.—Troop-horse D 28; mare, aged 5.

Disease.—Pulmonary congestion and broncho-pneumonia.

Treatment. — Parke Davis's influenza antitoxin by intravenous injection. *Admitted*, March 27, 1909; *discharged*, cured, May 23, 1909.

Admitted morning of March 27, with loss of appetite and high temperature. No diagnostic symptoms, and physical examination negative.

March 29.—Feeding very badly (eats only the smallest quantity of bran). Pulse weak. Conjunctivæ much injected. Urine and fæces normal. Physical examination of chest shows no definite change. Respiration accelerated and slightly laboured. Diagnosis, pulmonary congestion. 30 c.c. Parke Davis's influenza antitoxin aseptically injected into jugular vein.

March 30.—Slight improvement. Pulse better tone. Appetite somewhat improved, though refuses all hay. Conjunctivæ less congested. No enlargement of submaxillary glands or nasal discharge.

March 31.—General condition shows no change. Evidence of broncho-pneumonia left lung (crepitations and very slight dulness to percussion lower third left side). Occasional rales over base of trachea. Conjunctivæ hyperæmic. Coughs frequently.

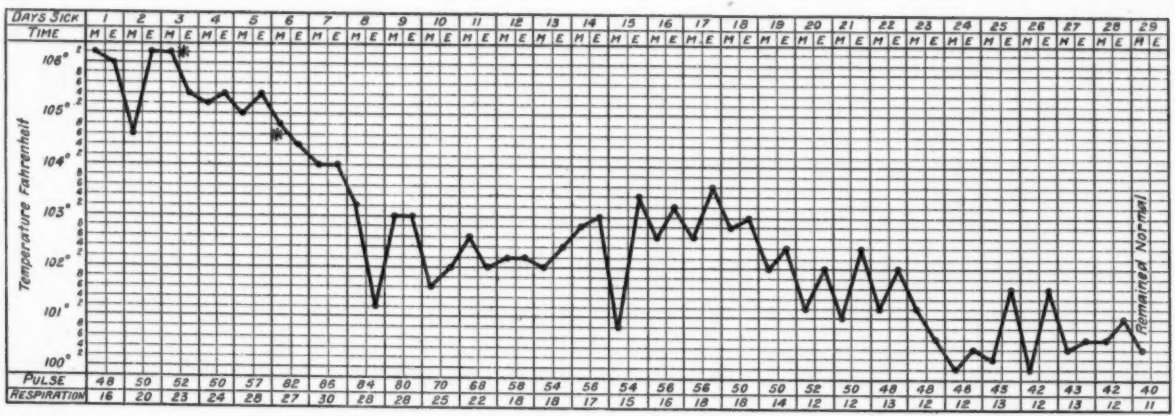
April 1.—Condition less favourable. Temperature keeps up, pulse frequency considerably increased, conjunctivæ more congested, and not feeding so well. Looks depressed, and cough continues. No alteration in physical signs except that tracheal rales were not heard. Mustard to sides, and 30 c.c. Parke Davis's influenza antitoxin intravenously injected.

April 2.—No improvement. Increased conjunctival injection. Appetite worse; pulse 86 and very weak; respiration rapid and dyspnœic. General appearance bad, yet there is no physical evidence of pulmonary implication of any extent.

April 4.—Slight improvement in character of respiration in conjunctivæ and in cardiac action. Pulse tension varies, an occasional systole occurs which is so weak as to produce no perceptible impulse. Appetite poor. Lies down a lot.

April 6.—Improvement maintained, though appetite continues bad.

April 8.—No material change. Conjunctivæ still much injected. No noteworthy abnormality on physical examination, though there are occasional loose rales over upper end of sternum, and some general indistinctness of vesicular murmur on left side.



Case 3.—Troop horse D 28, mare, aged 5.

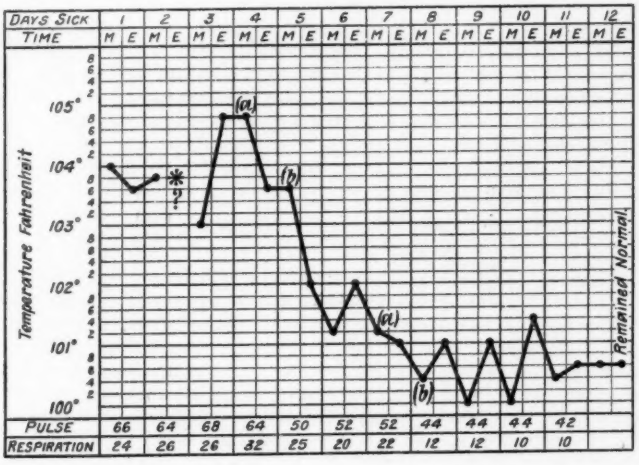
Treatment.—* 30 c.c. Parke, Davis & Co.'s influenza antitoxin by intrajugular injection.

April 9 to 12.—Progressing favourably. Feeding distinctly better. There has been no nasal discharge or submaxillary swelling.

April 14. — Favourable progress continued. Feeds slowly but finishes everything. Conjunctivæ normal, pulse practically normal, and respiration only very slightly accelerated, though temperature remains a trifle raised.

May 23.—Subsequent course favourable and uneventful. Discharged, cured, for light duty on this date.

Remarks.—Found to be a pronounced "roarer" shortly after return to duty. In this case there would appear to have been a "raging battle" for some days between the horse and his pneumonic invaders, and the question arises as to what extent the victory of the former over the latter may be accredited to the intervention of the antitoxin.



CASE 4.—Troop horse C 9, gelding, aged 7. *Anus dilated, temperature unregistrable.

Treatment.—(*a*) Antipneumonic serum *A* by subcutaneous injection.
(*b*) Antipneumonic serum *B* by subcutaneous injection.

CASE 4.—Troop-horse C 9; gelding, aged 7.

Disease.—Pleurisy with effusion.

Treatment.—Anti-pneumonic serum (*a*) and (*b*) by subcutaneous injection. *Admitted*, May 2, 1910; *discharged*, cured, June 6, 1901.

May 5.—Admitted morning of May 2, fever and anorexia. Since then the temperature has remained up and appetite has been bad, but hitherto there has been no signs other than those of simple fever. (No cough or nasal discharge.) To-day the horse looks fairly bright, but continues to feed badly, and respiration is markedly disturbed. There is a slight, thin, straw-coloured nasal discharge from both nostrils. *Physical examination:* Front and right side normal; left side, diminution of vesicular murmur upper half of chest; complete loss lower half,

and a large area of lower half is totally dull to percussion. Diagnosis, pleurisy and hydrothorax left pleural cavity. Is not coughing. Anti-pneumonic serum (*a*) subcutaneously injected.

(For subsequent anti-pneumonic injections see chart.)

May 6.—Feeds better. Pulse good tone. Conjunctivæ normal. Physical examination shows no change from yesterday, except that the area of total dulness is, if anything, a shade less, and the degree slightly less intense. General condition, slight improvement.

May 8.—Progressing favourably. Feeds well. Pulse good tone. Conjunctivæ normal. No nasal discharge. General appearance satisfactory, but is losing condition and appears weak. *Physical examination:* Front and right side continue normal. Left side, vesicular murmur remains inaudible. Dulness to percussion over lower half (becoming more marked inferiorly) is still present, but is less intense throughout and of smaller area than at last observation.

May 11.—Favourable progress maintained. *Physical examination* shows great improvement. Vesicular murmur is now clearly audible throughout on left side, and dulness to percussion on this side far less marked (only a small area of slight degree anteriorly lower fourth).

May 13.—Feeds well and progressing favourably in every respect. Is receiving Ol. lini. ʒii. with liq. arsenicalis ʒvi. daily, with feed.

May 16.—Normal in every way. No abnormalities discoverable to physical examination. Heart beat is somewhat forcible and pulse strong.

June 6.—Subsequent course uneventful and satisfactory. Discharged for very light duty.

Case 5.—Troop horse, C 56; gelding, aged 6.

Disease.—Pleuro-pneumonia and subsequent cardiac intermittence.

Treatment.—Antipneumonic serum (*a*) and (*b*). *Admitted*, May 12, 1910. *Discharged*, June 22, 1910. Cured.

May 12.—Was ridden in the school in the morning, and found to be going badly, and to have much bilateral nasal discharge (thin, straw-coloured), so was reported sick. Had not finished morning feed. Temperature 106·2° F.; pulse 84 and weak: respiration quiet. Physical examination of chest normal, except for slight "harshness" over trachea. Antipneumonic serum (*a*) injected as prophylactic. (For subsequent antipneumonic injection *vide* chart.)

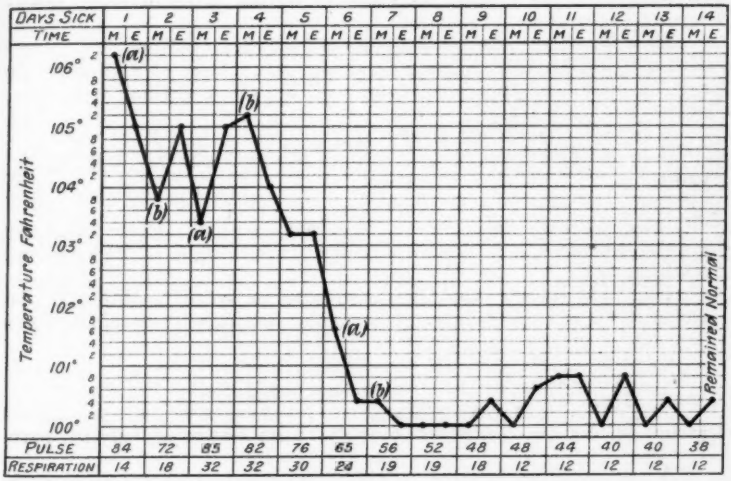
May 13.—Pulse very weak. Respiration accelerated, but not laboured. Feeds indifferently. Conjunctivæ practically normal. Is coughing. No submaxillary enlargement, and (to-day) no nasal discharge. *Physical examination:* Very slight "harshness" on auscultation over trachea. Right side, vesicular murmur loud, distinct and clear throughout. Resonant to percussion. Left side, vesicular murmur indistinct, and over lower fourth quite inaudible. Percussion shows an area of well-defined dulness commencing anteriorly about the eighth rib, and extending backwards. *Diagnosis.*—Pulmonary consolidation posterior part of left lung.

May 14.—Feeds badly; pulse rapid and weak. Conjunctivæ congested; not heard to cough. Respiration accelerated, but not laboured or associated with nostril dilatation. Looks dejected, and shows general appearance of serious illness.

May 16.—Finished feed last night, but has eaten practically nothing this morning. Looks dull, and pulse very poor tone. Not

heard to cough. Conjunctivæ less congested. Yesterday and to-day there has been a good deal of thin, serous, straw-coloured nasal discharge, but no submaxillary enlargement. Respiration quiet, but accelerated. *Physical examination:* Front and right side continue normal. Left side, vesicular murmur very indistinct upper third; quite inaudible lower two-thirds—this area being entirely devoid of sound. Lower half totally dull to percussion. *Diagnosis.*—Extensive pulmonary consolidation, accompanied with pleurisy and effusion left side. Weak blister to lower half of thorax on this side.

May 18.—Fed better yesterday, but not feeding so well to-day. Nasal discharge has diminished, and respiration less accelerated. Pulse reduced in frequency and improved in tone. General appearance is one of improvement.



CASE 5.—Troop horse D 56, gelding, aged 6.

Treatment.—(*a*) Antipneumonic serum *A* by subcutaneous injection.
(*b*) Antipneumonic serum *B* by subcutaneous injection.

May 19.—Feeding well. No cough, nasal discharge or submaxillary enlargement. *Physical examination*: Front and right sides normal. Left side, vesicular murmur remains inaudible over the greater part. Percussion note, however, shows great improvement since the 16th inst., the extensive dulness then observed having almost entirely cleared up.

May 21.—Feeds well. Pulse good tone, but is irregularly intermittent. Little or no nasal discharge. Physical examination of chest gives a practically normal result, except that respiratory murmur on left side is still to a great extent inaudible. There is some subcutaneous infiltration and swelling on this side, from the blister, which probably accounts for this. General condition satisfactory.

May 22.—Heart irregularly intermittent. Intermittence entirely erratic and arythmical, occurring at anything from fourth to sixtieth beat.

May 23.—Heart irregularly intermittent.

May 24.—Heart intermits constantly, generally after fourth and fifth beat alternately. Occasionally only a very brief pause between fourth and fifth or fifth and sixth, and then a marked intermission occurs after eighth.

May 25.—On first examination cardiac intermittence occurred regularly at every fifth beat, six times. Subsequently to this, three minutes' observation showed no intermittence whatever. General appearance satisfactory, and all other physical signs normal.

May 26.—No cardiac intermission during three minutes' observation (125 beats).

May 27.—No cardiac intermission during three minutes' observation (115 beats).

May 28.—One intermission observed in three minutes.

May 30.—No intermittence; cardiac action normal and perfectly regular. General progress satisfactory, and chest normal to physical examination.

May 31.—Cardiac action regular.

June 1.—One cardiac intermission during four minutes' observation.

June 2.—No cardiac intermission.

June 3.—One brief pause observed; cardiac action perfectly regular otherwise. To have half an hour's walking exercise night and morning (led).

June 22.—Horse appears strong and in good condition. Discharged for very light duty. No cardiac irregularity observed since last date.

Case 6.—Troop-horse D 33; gelding, aged 4.

Disease.—Strangles, with pulmonary implication.

Treatment.—One dose "strangline"; subsequently, antipneumonic serum (*a*) and (*b*). *Admitted*, May 25, 1910; *discharged*, July 14, 1910. Cured.

May 25.—Was seen last night to have a thickish, purulent nasal discharge (bilateral), and temperature 104° F. To-day there is no change. Respiration is accelerated, but feeds well. No submaxillary enlargement; 10 c.c. "strangline" (as prepared by Captain A. G. Todd, A.V.C., *vide* Veterinary Journal, August, 1910, p. 456) injected.

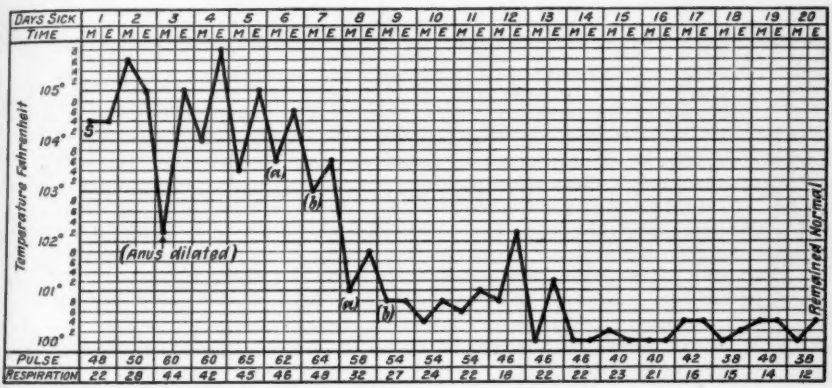
May 26.—Feeds well. Copious bilateral muco-purulent nasal discharge. Very slight submaxillary enlargement. Respiration accelerated, nostrils slightly dilated. Physical examination negative.

May 27.—Feeds well, but otherwise general appearance is bad. Temperature 102·2° F. only (but arms is slightly dilated). Respiration accelerated and dyspnœic. Conjunctivæ injected. Distinct submaxillary enlargement, particularly left side. *Physical examination:* Respiratory sound much accentuated over trachea. Vesicular murmur indistinct in comparison with the force of the respiration (equally so both sides). No abnormality to percussion. *Diagnosis* (present condition): Pulmonary congestion. Mustard to be applied to both sides of chest.

May 28.—Continues to feed well. Much nasal discharge continues Chest resonant to percussion, except for a suspicion of dulness lower fourth right side.

May 30.—No improvement. Very copious thick, purulent nasal discharge continues, but appetite is good, and horse looks fairly bright. Coughs a good deal, and respiration laboured and much accelerated. *Auscultation:* Pronounced loose rales over trachea. Vesicular murmur comparatively indistinct. *Percussion:* Slight dulness lower fourth, both sides; most marked right side. *Diagnosis:* Pulmonary congestion, with bronchitis and some questionable pleural effusion. Onset of pleuro-pneumonia appears highly probable. Very little reaction from mustard application on 27th, so ung. hydrarg. biniod. with cantharid. 1 : 30 applied to both sides, and anti-pneumonic serum injected.

May 31.—Much yellowish-white nasal discharge, and respiration



Days Sick	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Pulse	48	50	60	60	65	62	64	58	54	54	54	46	46	46	40	40	42	38	40	38
Respiration	22	28	44	42	45	46	48	32	27	24	22	18	22	22	23	21	16	15	14	12

CASE 6.—Troop horse D 33, gelding, aged 4.

Treatment.—S. 10 c.c. "Strangline" injected (vide *Vet. Journ.*, August, 1910, page 456).
(*a*) Antipneumonic serum *A* 10 c.c. by subcutaneous injection.
(*b*) Antipneumonic serum *B* 10 c.c. by subcutaneous injection.

rapid and dyspnœic. Not feeding so well. Conjunctivæ congested. Pulse fairly good tone. *Auscultation:* Rales over trachea no longer perceptible. Vesicular murmur normal upper half, but quite inaudible lower half, both sides. *Percussion:* Gives well-defined and total dulness whole of lower half left side; doubtful dulness lower fifth, right side. (There is thus no longer any question as to pleural effusion on the left side.)

June 1.—Feeds better. Pulse tone good. Nasal discharge about the same. Conjunctivæ less congested. General inference, improvement (*see* also chart).

June 3. — Feeding well, and nasal discharge has decreased. Physical examination shows great improvement. Total dulness on lower half of left side, observed on 31st inst., having almost disappeared.

June 7.—Favourable progress maintained. Nasal discharge diminishing. Very slight submaxillary enlargement still present, and respiration remains accelerated, but there is nothing on physical examination to account for this, physical signs being apparently normal.

June 12.—Feeds well. Very slight nasal discharge. Conjunctivæ normal. Submaxillary enlargement scarcely perceptible.

June 15.—Slight nasal discharge continues, and horse appears weak, but is normal in all other respects.

June 20.—No nasal discharge and normal in every way, except for very slight submaxillary enlargement.

June 22.—There is a small amount of thin mucoid nasal discharge, mostly from right nostril. No cough.

June 23.—Nasal discharge continues. No cough.

June 30.—No nasal discharge the last few days. A trace of submaxillary enlargement is still present (this is being painted with tr. iodi.). Otherwise normal in every way.

July 7.—No nasal discharge, and submaxillary enlargement has disappeared. Is normal in every respect.

July 14.—Discharged cured, for light duty.

Case 7.—Officer's charger (Captain S. J. C.); mare, aged 4.

Disease.—Pneumonia, with pleurisy and hydrothorax.

Treatment.—Antipneumonic serum (*a*) and (*b*). *Admitted*, July 25, 1910, *discharged*, September 7, 1910. Cured.

July 25.—Admitted with history of being off feed, having nasal discharge and slight cough. Pulse good; respiration accelerated; conjunctivæ injected. *Physical examination:* Faint rales over base of trachea. Left side, vesicular murmur loud and distinct; resonant to percussion. Right side, vesicular murmur indistinct over upper half, almost inaudible (with very faint crepitations) over lower half. Whole of lower half totally dull to percussion. *Diagnosis.*—Pulmonary consolidation, with pleurisy and hydro-thorax, right lung. Left lung healthy. Antipneumonic serum injected.

July 26.—Feeds moderately. Less nasal discharge. Mustard to both sides.

July 30.—Conjunctivæ injected. Respiration accelerated and slightly laboured. Coughs frequently; feeds fairly well; lies down. *Physical examination:* Right side, tubular breathing is audible over the upper half, whilst there is complete absence of sound over the lower half. To percussion upper half is resonant, lower half dull, though dulness has decreased both in intensity and in area since the 25th inst. Left side is normal, except for a small area of very doubtful dulness anterior lower fifth.

August 1.—Feeds well. Temperature subnormal. Conjunctivæ considerably improved. Lies down a great deal, and respiration slightly "stertorous."

August 3.—Pulse and conjunctivæ normal. Feeding well. No nasal discharge or submaxillary enlargement. *Physical examination* shows the following changes since the 30th inst.: Right side, lower half considerably more resonant to percussion, and vesicular murmur is now faintly audible in this area. Tubular breathing in upper half is less apparent. Left side continues normal.

August 7.—Progressing favourably. *Physical examination* shows great improvement, no abnormality being discernible.

August 11.—Favourable progress maintained. To have ten minutes' walking exercise. Ferri sulph. and nux vomica to be given in powder with food.

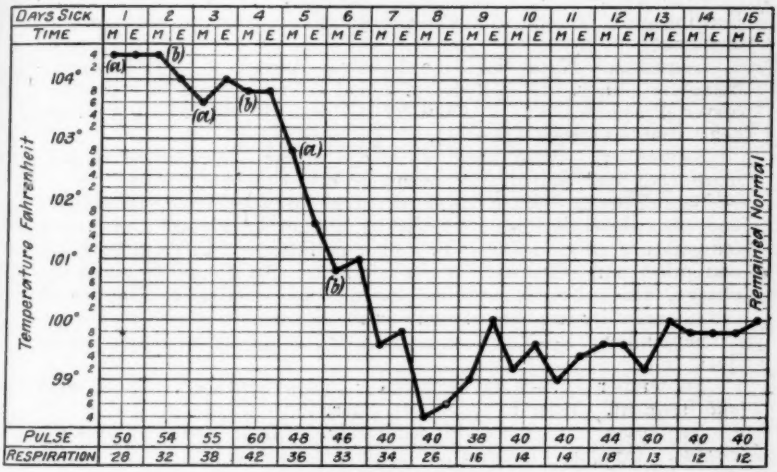
August 19.—There is very slight nasal discharge. Was not feeding well yesterday. Molars found to be sharp and irregular, and therefore rasped.

August 20.—Increased nasal discharge—bilateral, watery, mucoid.

August 23.—No change. Normal to physical examination of chest.

August 26.—Feeds well, and nasal discharge has ceased. Is in fairly good condition. There is a trace of submaxillary enlargement.

September 7.—No submaxillary enlargement. Has been having



CASE 7.—Officer's charger, Capt. S. J. C., mare, aged 4.
Treatment.—(*a*) 10 c.c. antipneumonic serum *A* by subcutaneous injection.
(*b*) 10 c.c. antipneumonic serum *B* by subcutaneous injection.

half an hour's exercise night and morning the last few days. Discharged cured, for very light duty.

CASE 8.—Officer's charger (Lieutenant W.); mare, aged 4.

Disease.—Pulmonary congestion and commencing pneumonia, with subsequent relapse and severe pleuro-pneumonia.

Treatment.—Antipneumonic serum (*a*) and (*b*). *Admitted*, August 18, *discharged* convalescent, November 6, 1910.

Admitted evening of August 18 with history of having had "a cold" and been "out of sorts" for two days. Respiration somewhat laboured. Much white, purulent, bilateral nasal discharge. Conjunctivæ slightly hyperæmic. Coughs. No enlargement of submaxillary glands. Feeding indifferently. *Physical examination: Auscultation*, great roughness (almost amounting to ronchi) over trachea. Vesi-

cular murmur distinct over upper two-thirds: inaudible over lower third, both sides. *Percussion*, dulness lower fourth, anteriorly, both sides (not marked, but slightly more pronounced right side.) *Diagnosis.*—Pulmonary congestion and commencing pneumonia (with questionable effusion?) both lungs. Mustard applied to throat, trachea, and sides. Mag. sulph. in drinking water. Pot. chlor. electuary, 10 c.c. antipneumonic serum (*a*) by subcutaneous injection. (For subsequent antipneumonic injections *vide* chart.)

August 20.—Feeding well. Copious purulent nasal discharge continues. Submaxillary glands distinctly enlarged, *Auscultation*, normal. Roughness over trachea has disappeared. *Percussion:* Dulness lower fourth both sides, less marked, scarcely perceptible. Heart-beat accentuated, but pulse normal.

August 25.—Progressing very favourably. Less nasal discharge. Feeding well. Submaxillary enlargement still present, and shows no change.

August 29.—Nasal discharge slightly increased. No change in submaxillary glands. Ung. hydrarg. biniod. to be applied to the latter. Physical examination of chest gives normal result. Accentuated heart-beat no longer apparent.

September 3.—No nasal discharge either yesterday or to-day; mare feeds well, and appears normal in every respect.

September 14.—Mare has shown no abnormality since September 3, and has apparently been convalescing favourably till last night, when temperature rose to 102·4° F. This morning it has risen to 104·8, and pulse and respiration are accelerated. No cough or nasal discharge, and submaxillary enlargement has practically disappeared. No abnormality to physical examination of chest.

September 15.—Not feeding so well; coughs; lies down a good deal.

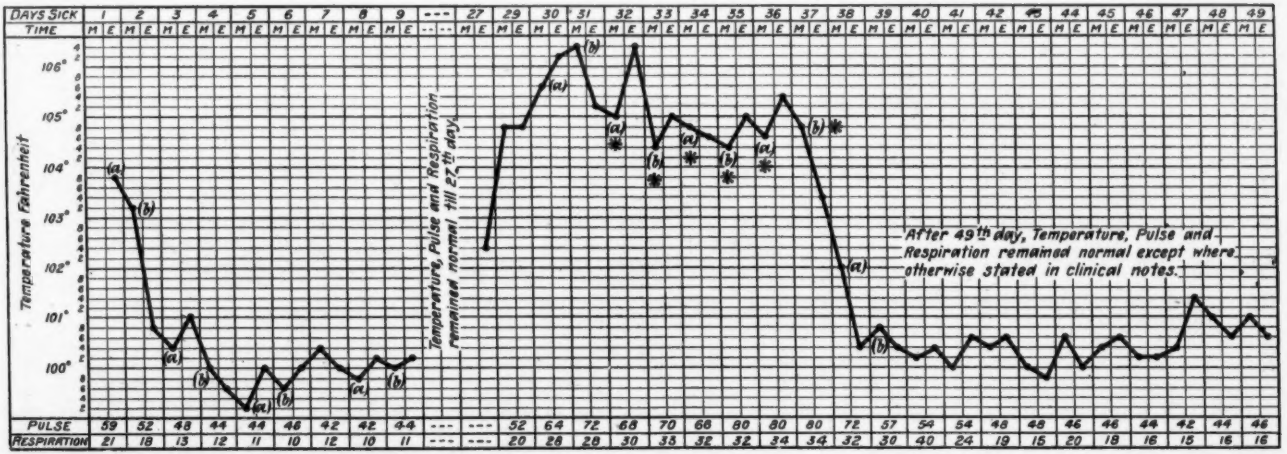
September 16.—Eats very little: looks depressed. Pulse weak and frequent. Mustard applied to sides.

September 17.—Feeding moderately. Slight whitish nasal discharge. Coughs. Respiration slightly laboured. Is in fairly good condition. Pulse better tone. Conjunctivæ normal. *Physical examination:* Front and left side normal, resonant to percussion and vesicular murmur loud and distinct. Right side, general slight dulness throughout, and an area of well-defined resonance about the centre. Vesicular murmur inaudible throughout.

September 20.—There has been no material change. Looks dull and feeds badly. Respiration laboured. Cardiac action rapid and weak. Conjunctivæ injected. Slight watery nasal discharge. General appearance unfavourable. Not heard to cough. Lies down.

September 21.—No change. *Physical examination* shows total dulness whole of right side except upper sixth, and vesicular murmur completely lost, the only sound being occasional patches of tubular breathing. Left side normal except slight (a questionable) dulness lower sixth. Front normal. *Diagnosis:* total consolidation of right lung (with pleurisy?).

September 23.—Feeding badly. Eats small quantity of green food and steamed hay, and drinks about a gallon of oatmeal gruel per day.) Respiration rapid, shallow and laboured, with much dilatation of nostrils. Coughs frequently. *Physical examination:* Front normal;



CASE 8.—Officer's charger, Lieutenant W., mare, aged 4.

Treatment.—(*a*) 10 c.c. antipneumonic serum *A* by subcutaneous injection.
(*b*) 10 c.c. antipneumonic serum *B* by subcutaneous injection.

* Double doses (20 c.c. injected).

left side normal, though vesicular murmur appears somewhat "muffled." Right side the physical signs are very peculiar. A faint vesicular murmur, with crepitations, is audible. To percussion the greater part of the central region is hyper-resonant, a very hollow, drum-like note being obtained. The lower sixth of this side is dull, probably due to some effusion having collected here. The general appearance is unfavourable, both physically and subjectively, and prognosis bad.

September 24.—Feeds better. Conjunctivæ good. Pulse improved, but character of respiration is bad. Coughs. Lies down. No nasal discharge. *Physical examination:* Front and left side continue normal. Right side: faint vesicular murmur, with crepitations, is audible over greater part. The whole side is resonant, except lower sixth, but some patches more so than others. Hyper-resonance less marked. General condition, slight improvement. Strychnine gr. 1 subcutaneously, to be repeated daily. The mare is very weak.

September 26.—Feeding better, but very weak, and showed great difficulty in getting up after lying down. *Physical examination:* much the same as on 24th inst. Pulse and character of respiration show improvement. Conjunctivæ normal. Strychnine to be increased to gr. iss. per day.

September 30.—Feeling well and general appearance shows great improvement. Chest appears normal to physical examination, but cardiac rythm is most irregular, strychnine to be continued; also potass. iod. ʒiii. in drinking water night and morning with a view to possible tendency to preventing future laryngismus.

October 5.—Progressing favourably in every respect. Cardiac action more regular, and the mare is gaining strength. No abnormality is apparent on physical examination, but the submaxillary glands are still slightly enlarged on both sides. Marked muscular twitching about the triceps has been observed. As this may be due to the strychnia injections these are to be discontinued.

October 11.—Favourable progress maintained. Temperature and cardiac action normal; feeding well, and improving in condition. Muscular clonus referred to on 5th inst., no longer present. Respiration accelerated (is 20 to-day, was 18 yesterday, and 20 on 9th inst.), but physical examination shows no abnormality.

October 20.—Doing well in every way; respiration normal and has been so since 12th inst.

November 6.—Subsequent course favourable and uneventful. Is having half an hour's walking exercise, led, night and morning. Discharged convalescent.

Remarks.—The severe relapse that occurred in this case is somewhat remarkable. At the end of the first week it seemed evident that the threatened pneumonic invasion had been effectually cut short, but as subsequent events showed its onset had been merely postponed.

There can be no doubt that the attack was both virulent and determined, though to what extent the animal's defensive powers (whereby the disease was confined to one lung and a favourable issue resulted) were fortified by the action of the serum, can only be a matter for conjection.

Some of the physical signs evinced were far from clear. The area

of hyper-resonance observed on the right side on September 17 is difficult to account for, unless it was an instance of what is described in Taylor's "Practice of Medicine" (p. 410) as "skodaic resonance," which is said to occur over the upper part of the lung in cases of pleuritic effusion occupying the lower half or two-thirds of the chest. On September 21 the signs were classically indicative of complete hepatization of the right lung, but the peculiar phenomena referred to on September 23 seem impossible of explanation. It would appear, however, that they must have been in some way associated with commencing resolution, as it will be seen on reference to the chart that the temperature fell to normal that evening, and with one trivial exception remained so, whilst the pulse-rate fell from 80 on the 22nd to 57 on the 24th, and a process of slow, though uninterrupted, recovery ensued from that time.

Case 9.—Officer's charger (Lieutenant G. B.); gelding, aged 5.

Disease.—Pleuro-pneumonia.

Treatment.—Anti-pneumonic serum (*a*) and (*b*). *Admitted*, August 20, 1910; *discharged*, convalescent, September 17, 1910.

August 20.—Reported sick, on account of being "dull and not feeding." No history of cough. No nasal discharge or submaxillary enlargement. Conjunctivæ congested. Respiration accelerated and laboured. *Physical examination:* Auscultation normal. Percussion shows fairly well-developed dulness lower fifth, right side. Anti-pneumonic serum injected, and mustard to chest both sides.

August 21.—Feeding badly. Appears very ill and dejected.

August 22.—Respiration greatly accelerated and marked dyspnœa. Feeds very indifferently. Pulse weak. Conjunctivæ congested. Coughs. No nasal discharge. *Physical examination* shows no definite change. There is an occasional "splash" audible over base of trachea. Vesicular murmur is somewhat indistinct, and there is a very slight dulness to percussion lower fifth, both sides. From the character of the respiration there is evidently much pulmonary hyperæmia.

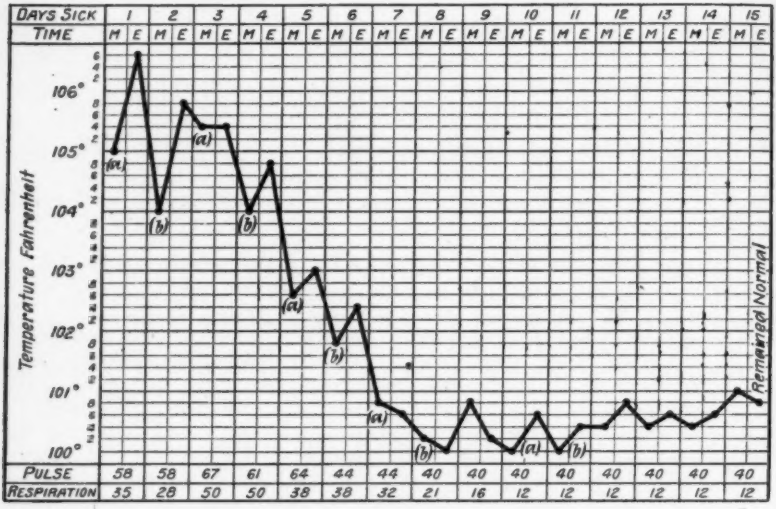
August 23.—No improvement. Feeds very badly. Pulse hard and weak. Coughs frequently. Conjunctivæ injected. Bowels normal. *Physical examination:* Vesicular murmur is audible lower half, right side, and some patches of well-defined tubular breathing are present about the centre. Lower half right side is totally dull to percussion. Left side is resonant, and vesicular murmur is audible, though indistinct, throughout. Constant and very pronounced "splash" over base of trachea. Respiration 50, and marked dyspnœa. All extra-respiratory muscles in play, and a peculiar clonic twitching of the intercostals is present. Remains standing up, in one position, with head down. General appearance bad, and prognosis unfavourable.

August 24.—Feeds better. No nasal discharge. *Physical examination:* Less "splashing" over trachea. Dulness on right side has increased both in area and in intensity, lower two-thirds being totally dull. Tubular breathing, as observed yesterday, is no longer apparent (this absence being due no doubt to pleuritic effusion). Vesicular murmur is audible over the upper third, but the lower two-thirds is devoid of sound. Left side remains resonant, and is normal to auscultation except that vesicular murmur is indistinct as compared with

the respiration rate. Physical signs show no improvement, though respiration is less accelerated; horse looks brighter, and subjective symptoms generally slightly more favourable.

August 25.—Slight improvement. Feeds better, but coughs considerably. *Physical examination:* Auscultation over trachea normal. Right side, vesicular murmur distinct, and normal over upper third; inaudible over lower two-thirds. To percussion, if there is any change at all, the dulness over lower two-thirds is a trifle less marked. Left side continues normal. Conjunctivæ congested. Heart action and pulse satisfactory, and general condition fairly favourable.

August 27.—Improvement maintained. Feeding well, and general



CASE. 9.—Officer's charger, Lieutenant G. B., gelding, aged 5.

Treatment.—(*a*) 10 c.c. antipneumonic serum *A* by subcutaneous injection.
(*b*) 10 c.c. antipneumonic serum *B* by subcutaneous injection.

appearance satisfactory. Physical examination shows improvement on right side. Vesicular murmur is faintly audible over the lower two-thirds, and the dulness in this area is decidedly less. No nasal discharge or submaxillary enlargement.

August 29.—Progressing very favourably, and physical examination shows great improvement. Vesicular murmur is now clearly audible throughout the whole of right side, and the dulness to percussion has almost completely cleared up.

September 2.—Feeding well and progressing favourably in every way. Pulse occasionally intermittent.

September 7.—Favourable progress maintained. Coughs occasion-

ally, and there is an occasional cardiac intermittence. Otherwise normal in every way. No abnormality is discernible on physical examination.

September 17.—Subsequent course favourable in every respect. Discharged convalescent.

NOTES ON A HUMAN TRYPANOSOME TRANSFERABLE TO ANIMALS IN NORTHERN RHODESIA.*

By L. E. W. BEVAN, M.R.C.V.S.
Salisbury, Southern Rhodesia.

Indexed B. A. I.

Source of Virus.

The virus used to originate the strain of human trypanosomiasis at this laboratory was obtained from an European who, arriving in Southern Rhodesia from the north in November last, was found to be suffering from trypanosomiasis. This case was of considerable interest, inasmuch as there appeared grave reason to suppose that the patient had contracted the disease in Northern Rhodesia in an area thought to be free from *Glossina palpalis*. In these circumstances it became a matter of grave importance to determine the identity of the trypanosome with which he was infected and the manner of its transmission in nature.

Transmission through Animals.

A supply of blood having been obtained by the courtesy of Dr. Heygate Ellis, of the Medical Department, a number of laboratory animals were inoculated, and among others, sheep and a mule. The facility with which these latter became infected opened up the question as to the part played by the lower animals in connection with human trypanosomiasis in nature. Shortly after these experiments commenced it was announced that Bruce † and his colleagues working in Uganda had found that cattle in the "fly area" (*G. palpalis*) did naturally harbour *T. gambiense* — a discovery which rendered the study of sleeping sickness a legitimate branch of work in a veterinary laboratory.

The results obtained here have been of some interest and have shown that not only are some of the domestic animals readily susceptible to this human trypanosome, but that artificial inoculation

* Since this article was written we have received a cablegram from Mr. Bevan saying that the trypanosome has been definitely identified as *T. vivax*. (See p. 2.)—Eds. *V.J.*

† The communication by Bruce and others on this subject will be reproduced in the Veterinary Journal for February.—Eds. *V.J.*

gives rise in them to symptoms no less severe than those caused by infection with the animal trypanosomes.

It has been possible to keep under observation at the same time sheep inoculated with the so-called *T. dimorphon* of North-Western Rhodesia and the animal trypanosome of these territories, and it has been found that the disease arising in sheep inoculated with the human trypanosome has been more acute and characterized by more severe symptoms.

Similarly a mule offered no resistance to a single inoculation with the human parasite which produced a far more severe reaction than the animal trypanosome of Southern Rhodesia to which equines appeared to possess a marked resistance.

Virulence of Strain.

From an examination of charts of sub-inoculated animals it would appear that the strain is of quite exceptional virulence—an observation which coincides with the experience of those Medical Officers who have studied the disease in human subjects in the field.

Compared with the recorded results of previous experiments with *T. gambiense*, the period of incubation and the duration of the disease appears to be unusually short, as indicated by the following averages :—

Animal	Average period of incubation	Average duration of disease
Rabbit	7 days	24 days
Guinea-pig	8 ,,	38 ,,
Rat	5½ ,,	36 ,,
Mule	6 ,,	About 100 days
Sheep...	6 ,,	47 days

The above figures are only approximate, as in some animals the course of the disease has been modified by treatment, and the intensity of the virus has been altered from time to time by passage through various species of host. In sheep severe infection is not always associated with the appearance of trypanosomes in the peripheral blood, and the period of incubation can then only be based upon the first definite elevation of temperature.

Symptoms.

In most cases the disease runs an acute course, or, after a preliminary stage when symptoms have not been well marked, has

terminated by crisis. In rabbits and sheep there is a remarkable œdema of the face, especially that part situated between the eyes and nostrils. The photographs* give a good idea of the characteristic appearance presented. In other trypanosomiases œdema at the base of the ears and around the nose occur, but the extent and situation of the swelling in these cases appear to be exceptional. In those sheep which have shown no other symptoms save the irregularly elevated temperature, and where trypanosomes have not been found in the peripheral blood, the swelling of the head has enabled one to recognize infection. If this symptom holds good, in natural circumstances it should assist in the detection of "reservoirs" in those areas where prophylactic measures are being adopted. An elevated temperature has also been present in all cases, but examination of a large number of charts does not reveal any characteristic thermal wave, nor has it been possible to recognize any relation between temperature and the appearance of trypanosomes in the peripheral blood. In sheep, for example, the disease may run its course without any parasite being detected in the blood, although a small quantity used for the sub-inoculation of rabbits will give rise to an infection characterized by an abundance of trypanosomes in the blood.

Human Trypanosomiasis.

Subject : Black sheep with lamb at heel.
Virus : 3 c.c. warm citrated blood from brown buck rabbit.
Date of inoculation : August 2, 1910.

Date	Temp.	Remarks
Aug. 3 ...	102·4	
,, 4 ...	103	
,, 5 ...	104·5	
,, 6 ...	105·2	
,, 8 ..	104	
,, 9 ...	102·6	
,, 10 ...	104·8	
,, 11 ...	104·8	
,, 12 ...	104·4	Rabbit inoculated with 2 c.c. blood.
,, 13 ...	104·8	
,, 15 ...	105·8	Above rabbit shows trypanosomes.
,, 16 ...	105·8	
,, 17 ...	106	
,, 18 ...	106	
,, 19 ...	105·4	
,, 20 ...	105·8	
,, 22 ...	105·8	
,, 23 ...	106·2	Above rabbit dead.

* No photographs were received with the article.—Eds. *V.J.*

Date.	Temp.	Remarks.
Aug. 24 ...	105	Œdema of throat. Typical swelling of head.
,, 25 ...	105·8	
,, 26 ...	106	
,, 27 ...	106	
,, 29 ...	105	
,, 30 ...	105	Very ill. Œdema of head and neck.
,, 31 ...	104·8	
Sept. 1 ...	102·4	
,, 2 ...	...	Dead.

Trypanosomes never found in peripheral blood.

In one or two rabbits somnolence has occurred, and in some of the sheep brain symptoms have predominated during the last few days.

In other respects the symptoms are those common to animal trypanosomiases.

Identity of the Trypanosome.*

It has been suggested that the human trypanosome of Northern Rhodesia may not be *T. gambiense*, but some animal trypanosome (*e.g.*, *T. brucei*) habituated by the method of transmission or passage to the human host. This possibility has been borne in mind since the commencement of experiments at this laboratory, and from time to time material has been sent to experts in Europe with the view to establishing the identity of the parasite.

Morphology.—The endeavour has been made to classify the parasite by careful study of its morphology, but up to the present no features have been detected which would justify one in differentiating it from *T. gambiense;* moreover, it has been felt that the utmost caution should be taken in this respect, inasmuch as the too hasty announcement of the discovery of a new trypanosome pathogenic to man would naturally cause considerable alarm and economic loss in these countries threatened by its invasion.

Minchin, in a "Note on the Polymorphism of *Trypanosome gambiense*" ("Parasitology," vol. i., No. 3, p. 326), recognizes three typical forms of this trypanosome when a blood-smear is fixed with osmic vapour, stained with Giemsa's stain and mounted with Canada balsam. He claims that "the difference between the three forms is by no means one merely of size," and recognizes :—

(1) A slender form of great length and having a very long free flagellum.

* (See footnote, p. 41.)

(2) A stumpy form which is short, the flagellum of which is also very short, especially the free portion.

(3) The ordinary form more or less intermediate between the two extreme forms.

The human trypanosome which, although passed through animals in this laboratory, has retained its morphological characteristics, exhibits in most cases specimens of the three types described in Minchin.

The *prevailing* type, of which the long and short forms appear to be derivatives, may be described as follows:—Average total *length*, 26-38 μ; average *width*, 1·7 to 2·25 μ; *micro-nucleus*, about 1·25 μ from posterior extremity; *posterior extremity*, a truncated cone, the apex lying to the side of the median line; *macro-nucleus*, longitudinal ovoid, 4 to 6 μ long, posterior edge about 7 μ from the posterior end of the parasite; *undulating membrane*, well developed and highly festooned (five or more folds); *flagellum*, fine with free portion about 7 μ long.

Some specimens show granules, and in some there is an area which stains only faintly anterior to the micro-nucleus.

The *long* form has its posterior extremity drawn out into a "beak," its body is narrower, the macro-nucleus is elongated, and the free flagellum may measure up to 12 μ or longer.

In the *short* forms the posterior extremity is shorter and the micro-nucleus may be terminal. The macro-nucleus is round or slightly oval, and is situated centrally or slightly posterior to centre. The parasite is broader than the other types. The flagellum has little or no free portion.

Another type is frequently met with, especially in animals about to die. It is of the long or medium type, but stains faintly, the undulating membrane and flagellum being very inconspicuous.

Parasites undergoing degeneration or division, or altered or distorted in the preparation or staining of the smear, frequently present unusual appearances, and may be seized upon as evidence of a new species. Too much importance should not be attached to such irregularities until various methods of technique have been employed to determine whether they are proper to the parasite or merely artifacts.

Atoxyl Resistance.

It has been stated that the trypanosome of Northern Nigeria and Nyassaland is remarkably resistant to atoxyl, a contention which is brought out by the following experiment:—

Subject :—Ewe (large brown fat-tail).

Oct. 31 ,1910, 10 a.m.—Received intravenously 1 gm. atoxyl in aqueous solution.

Oct. 31, 3.30 p.m.—Received subcutaneously 10 cc. citrated blood of lambs, No. 3, suffering from human trypanosomiasis.

Nov. 1, 10 a.m.—Received intravenously ½ gm. atoxyl.

Nov. 2.—Received subcutaneously 5 c.c. citrated blood of lamb No. 3.*

Nov. 10.—1 c.c. of this ewe taken and injected at once into rabbit.

Later.—Received 1 gm. atoxyl.

Nov. 16.—Above rabbit showing trypanosomes.

Nov. 18, 5 p.m.—Above rabbit died. Blood containing average 25 trypanosomes to the field

Nov. 21.—Sheep showing marked clinical symptoms.

The experiment would appear to indicate that atoxyl is useless as a preventive against this trypanosome, which can establish itself in a host previously saturated with the drug. Further, the parasite recovered from the treated animal appears to have increased in virulence.

Trypan-blue.—The trypanosome also appears highly resistant to trypan-blue, as is shown by the following experiment :—

Subject : Ewe No. 5.

Virus : 2 c.c. warm citrated blood from black ewe.

Date : August 29, 1910.

Result : Temperature and clinical symptoms showed infection. Trypanosomes also found in blood, September 16, 1910, September 28, 1910, and October 7, 1910.

October 17.—Animal apparently dying. Blood taken and inoculated into control rabbit No. 1. Later, received intravenously 100 c.c. of 1½ per cent. solution trypan-blue.

October 18.—Animal still very sick, intensely stained ; 1 c.c. blood taken from ewe and inoculated into control rabbit No. 2. Later, received 10 c.c. of 10 per cent. solution of atoxyl, intravenously.

October 21.—4 c.c. blood taken (seventy-six hours after injection of atoxyl) and injected into control rabbit No. 3.

October 29.—Ewe died.

Control rabbit (No. 1)	Control rabbit (No. 2)	Control rabbit (No. 3)
Oct. 22. Trypanosomes seen	Oct. 22. Trypanosomes seen	Nov. 16. Still alive
Oct. 26. Died after bleeding	Nov. 1. Died	Trypanosomes never seen

* The strain recovered from lamb No. 3 has not been rendered atoxyl-resistant by artificial means, but has been shown by other experiments to be temporarily affected by the exhibition of the drug.

Post-mortem examination of ewe showed well-marked staining of the tissues with blue. The meninges were highly coloured, *but the brain itself was not stained.*

Various methods of treatment, both with drugs and sera, have been tried, but up to the present no successful results have been recorded. No case of natural recovery or immunity has been encountered; those animals which have appeared resistant or tolerant have eventually succumbed.

It has frequently happened that the exhibition of an agent of low parasitotropic, but high organotropic properties to an animal in which the disease is running a normal course has brought about crisis. The use of drugs in unsuitable doses has produced similar results.

It may be mentioned that experiments have been conducted which have proved that the tissues of a fœtus of a highly infected mother are not infective; also that the milk of an infected ewe does not convey infection to the lamb feeding upon it, or to animals artificially inoculated with it. Lambs feeding upon such milk derive no immunity therefrom.

THE NINTH DAY IN THE COVERING OF MARES AND THE DURATION OF PREGNANCY.

By MIECKLEY.

Beberbeck.

There are no scientific experiences as to what day during the time of œstrum is the most favourable to have a mare covered. The readiness for the stallion ceases between the seventh and ninth days after the beginning of œstrum. It is considered best to cover the mare on the second or third day of the heat and to repeat the jump on the fifth and seventh days. It is not right to adopt the old custom of leading the mare to the stallion again the ninth day after she has been once served.

In Beberbeck, in 1910, the average duration of pregnancy (72 births) was 329 days; the shortest pregnancy 314 days, the longest 347 days. The text-books give the extremes of 310 and 410. The popular view that longer pregnancies occur with colt foals than filly foals was not always found to be correct. The average minimal and maximal times in other studs were: Repitz, 338, 319, 367; Trakehnen, 329, 305, 347; Bejohrgallen, 329, 311, 347; Gurdzen, 329, 306, 346; Danzkehmen, 331, 308, 343; Jonasthal, 327, 315, 344; Georgenburg, 331, 311, 360; Neustadt (Posse) 326, 313, 343.

(*Deutsche Tierärzt. Woch.*)

Clinical Articles.

NOTES ON THE CASTRATION OF CRYPTORCHIDS THROUGH THE FLANK.

By E. C. WINTER, F.R.C.V.S.,
Limerick.

For some time now I have been operating on cryptorchids through the upper flank, and the results have, I think, justified the departure from the usual mode of procedure. I have in all operated in this way on twenty-five horses from two to nine years old, and have lost three—one from peritonitis, one from septicæmia, and one which died under chloroform before the operation had commenced. The others all did well, but in two of these cases I failed to remove or find the gland, as well as in the peritonitis case above mentioned. My mode of procedure is to physic and starve the patient for forty-eight hours to get the bowels empty, giving an enema an hour before operating. The horse is cast and chloroformed, and the skin over the seat of operation shaved and rubbed with iodized chloroform. The incision is made where the curl is in the hair, in front of and below the point of the hip, first through the skin, vertically, then through the two layers of muscle, diagonally (not cutting the striæ, but dividing them with the fingers or a spatula) each layer in a different direction. A towel soaked in antiseptic fluid is then wound round the wrist and pressed against the flank to exclude air, and the peritoneum broken through with the finger nails. If the testicle is not found at once I always look for the origin of the cord behind the kidney and traction on this soon finds it. If possible, I get the gland outside and remove it with the "Reliance" castrator, if not, I pass in an écraseur and remove it that way. I find it quite sufficient to suture the outer layer of muscle with three independent sutures, and about a similar number in the skin, and then paint the wound over with collodion. Healing usually takes place by first intention, and the wound rarely gives trouble. Where I have sutured the internal layer of muscle I have found the sutures buried after three or four days and have left them; I never suture this layer now, as I find it is not necessary and the sutures act as irritants. Nine out of ten patients never miss a meal afterwards.

The precautions to be observed are the starvation mentioned above, proper antiseptic precautions during the operation, and careful feeding afterwards.

The cicatrix in the scrotum generally shows where one testicle has been removed, and having found this, the operation is performed on the flank of the other side. This operation is, of course, contra-indicated where the testicle is in the canal. In one case I could find no trace of a testicle, and thought I found a cord under the psoæ muscles extending back over the bladder, but, finding a similar one on the other side, I concluded that they were the ureters. The horse died four days afterwards, and I found two small testicles between the neck of the bladder and the rectum. The other two cases in which I failed to find the testicle did well and were subsequently sold, and I am quite certain the glands were not in the abdominal cavity, although the horses behaved like rigs, and must have been such. Each had been purchased at two years old, and there was no history to be had.

One of my successful cases was a case of hypospadias in a cryptorchid two years old. This animal had a vulva between the thighs just behind the udder, from which it could protrude a penis, and one testicle was outside the vulva, whilst the other was close to the kidney suspended by a short cord.

NOTES ON THREE CASES OF BROKEN WIND.

By R. W. MELLARD, M.R.C.V.S., Lieut. A.V.C.
Mhow, India.

THREE cases of broken wind occurred in Mhow, Central India, in the following animals, rendering them incapable of work during the rains (June to September), 1909:—

(1) Roan waler mare, trapper, 15 hands high, aged 14.

(2) Chestnut waler gelding, polo pony, 14·2 hands high, aged 12.

(3) Bay waler gelding, charger, 16 hands high, aged 9.

Throughout the previous hot weather, 1909, these horses had frequently suffered from slight coughs, which had in no way interfered with their work except that the cough was occasionally noticed when first coming out of the stable in the morning.

The period when the broken wind (double flank movement and dyspnœa, &c.) first became noticeable was after the rains had been on for about a fortnight or three weeks, and these horses had been eased considerably in their work and were allowed out daily grazing for two or three hours, so that a very large proportion of their food was green grass. During the hot dry weather they had received no green food, their hay, as is usually the case in India, was very dry, dusty, and

contained a large amount of woody fibre through being cut too late, and in fact everything as regards diet and climate was unfavourable for a broken-winded animal, yet they continued to do their work satisfactorily, and it was only in the rains that they became more or less incapable of doing even slow work.

So soon as the rains were over in 1909 and the weather became hot and dry again and their diet was of a very dry nature (corn and hay) they gradually improved, and within two months the only remaining symptom of the broken wind was the slight and sharp hoarse cough, always more prevalent first thing in the morning when taken out of the stable.

All the three horses worked regularly during the cold and hot weather of 1909-10 until the rains of 1910 when the broken wind occurred.

No. 1, the trapper, was now extremely bad, and became much distressed if only walked a few yards. She was destroyed in August, 1910, and the *post-mortem* examination showed extensive emphysema of both lungs.

No. 2, the polo pony, was fairly bad this year and quite incapable of doing fast work, but since the weather has become warm and dry again there has been a marked improvement and the pony will probably work well as long as the weather is dry and warm.

No. 3, the charger, was sold out of the station and I regret I was unable to get any further record of the case.

A common symptom in all these cases was that whenever there was a break of four or five days fine weather during the rains the dyspnœa became very much less.

I considered these cases worth recording for the following reasons :—

(1) Instances of broken-winded animals doing much better on very dry food than a liberal diet of green food.

(2) Symptoms were very much regulated by state of climate (much worse in wet than dry weather).

(3) Cases of broken wind I had seen at home had always been the reverse of the above.

EPHEMERAL FEVER.

By FRANK CHAMBERS, M.R.C.V.S., G.V.S.
Umtata, South Africa.

The accompanying photograph shows a cow suffering from ephemeral fever, or (three days' sickness) a disease affecting cattle, which was so admirably described by Veterinary Surgeon Freer, of Uitenhage, C.C., in an issue of the Veterinary Journal early in 1910.

The chief features to be noted from the photograph are the stiff and tucked-up appearance of the animal. In the outbreak during

Animal affected with Ephemeral Fever.

which this cow was affected, seven cows died as the result of drenching, whilst those which were left alone recovered.

[The excellent article by Mr. Freer, referred to above, appeared in the issue of the Veterinary Journal for January, 1910. In the course of it Mr. Freer also remarked on the two points referred to by Mr. Chambers. He likened the general appearance of an affected animal to "the wooden cow we obtained from the top shop in our early youth," and with regard to treatment he said, "the less the patient is interfered with the better will be the results."—Eds. *V.J.*]

BELL'S PARALYSIS IN A HEIFER CALF.

By T. G. PALGROVE, M.R.C.V.S.

Department of Agriculture and Stock, Sydney, New South Wales.

When visiting the Wagga Experiment Farm, New South Wales in May last, Mr. George Lee, the dairy instructor, there drew my attention to a six-months-old Jersey heifer calf, which on examination appeared to me to be suffering with Bell's paralysis.

It may not be out of place to summarize here the generally accepted theories regarding this condition before proceeding to an account of the case itself, especially as most authorities are agreed that cattle seldom are affected with the disease.

Bell's paralysis is generally due to injury to the facial nerve, which supplies motor power to the muscles of the ears, eyelids, nose, lips, and cheeks—such injury generally being external in nature, such as a blow, and impairing the conductive power of the nerve. The disease may also occur as the result of severe chill, or may arise during the progress of influenza or petechial fever, the development of a melanotic tumour in the parotid gland, or the presence of an excrescence in the Fallopian canal may cause pressure on the facial nerve with impairment of function as a result.

The facial nerve arises from the pons, enters the inner ear, passes through the Fallopian canal and outwards through the stylomastoid foramen of the petrons temporal bone, penetrates the parotid gland, and then passes over the posterior border of the lower jaw on the external surface of which it divides.

The three following portions may be enumerated according to their points of origin :—

(1) In the Fallopian canal arise: (*a*) A nerve for the stapedius muscle; (*b*) A nerve to the chorda tympani.

(2) At the stylomastoid foramen arises: (*a*) The posterior auricular nerve; (*b*) The middle auricular nerve.

(3) Following the course there arises: (*a*) Nerve to the occipito-styloid, stylo-hyoid; and digastric muscles; (*b*) The zygomatico-temporalis nerve, which gives off: (i.) The anterior auricular nerves; (ii.) branches to the temporalis muscle; (iii.) branches to the orbicularis palpebrarum; (*c*) The cervical branch, giving off twigs to the depressor of the ear, the superficial cervical muscles, and afterwards passing over the external surface of the lower jaw and supplying the muscles of the nose, lips, and cheeks as a motor nerve.

It will be seen that for a portion of its course the facial nerve is exposed to the chance of injury from external causes. The symptoms

exhibited by the subject were ptosis of the left eyelid (superior), left side of lower lip pendulous and twisted outwards, constant dribbling of saliva from the left side of the mouth, complete drooping of the left ear, loss of power of the muscles of the left eyelid, ear, and left side of lower lip, and general loss of condition.

I could not detect any signs of impaired hearing, neither could I find any appearance of neuritis. There was no evidence of any swelling such as would be expected as a result of the inflammatory exudate poured out when the nerve and its neurilemma are inflamed, neither was there any evidence of pain on pressure over that portion of the nerve which lies on the exterior of the lower jaw.

Owing to the absence of any evidence of external injury, and also to the likelihood that the zygomatico-temporalis nerve was affected, as evidenced by the ptosis, drooping ear, and inability to close the eyelids, I considered that the lesion was probably in the proximal portion of the course of the nerve.

The treatment consisted of the application of a blister consisting of one part of biniodide of mercury (red) to four parts of lard, round the base of the left ear, across the poll, and along the course of the nerve on the left cheek.

The case was then left in Mr. Lee's hands with instructions to keep the bowels open by means of Epsom salts, give any nourishment that the subject could and would take, and remove the blister after a period of four days by means of a little sweet oil.

On my next visit a fortnight later, I found considerable sloughing of the skin round the base of the ear, and a slightly improved condition of the lower lip and eyelid, each having regained the power of movement in a slight degree. The left ear still remained pendulous.

I was unable to see the case for another month, and then found that the ptosis was almost gone, the lower lip had recovered a good deal of its motive power, and the left ear was not drooping to anything like the former extent; also the general condition of the subject was improving. There was a steady improvement maintained, and in a further two months' time all traces of the condition had disappeared and the subject was in good health again, a result largely due to the care with which Mr. Lee nursed the case. The case is an interesting one partly because Bell's paralysis is a rare condition amongst cattle and partly on account of the duration of the case—four months—from first observation to ultimate recovery.

As a general rule cases of this nature either recover more quickly or not at all.

The points that struck me more particularly in connection with the case were: (*a*) the absence of any evidence of external injury either by blows or pressure; (*b*) the complete absence of neuritis; (*c*) the well-marked ptosis; (*d*) the remarkable dropping of the left ear; (*e*) there was no falling-in of the left nostril.

I have often heard it suggested that a blister is useless in such cases, but in this one it was certainly efficacious. Possibly in some cases the blister used has not been of sufficient strength.

FOALING CASE—RUPTURE OF UTERUS DURING FOALING.

By E. F. J. BORDEAUX, G.M.V.C.

Melbourne, Australia.

The subject was a heavy draught mare, weighing about 15 cwt. This mare was due to foal, and had shown colic pains for two days before I saw her. She had also been straining at intervals. When I examined her, the temperature was 101° F., pulse and mucous membranes normal, appetite good. The milk was pouring out of the teats, and the hocks were soiled by sanious fluid. The cervix uteri was fully dilated, but the uterus was empty, except for a small quantity of fluid normal in appearance. Under the uterus the foal could be distinctly felt. I searched carefully for a rupture, but could find none. The right cornu, which had evidently contained the foal, was explored as far as the arm could reach, but nothing abnormal could be detected. The examination produced no irritation, and no straining followed; the mare started grazing as soon as released. I told the owner the case would prove fatal, and offered to open the abdomen, under chloroform, but he refused, preferring to let the mare "take her chance." He promised to inform me when death took place. The mare died about forty hours later.

Post mortem.—The abdominal cavity was filled with fluid, probably a mixture of placental fluid and exudate, which was dark in colour and had an offensive odour. The foal contained in the placenta, which was ruptured in one place, dropped out with the intestine, when the abdominal wall was opened, also two reddish blood clots representing about two quarts. The right cornu of the uterus was ruptured inferiorly at the extremity, the opening appearing hardly large enough for the foal to come through. The edges of the rupture were irregular and jagged, but the muscular wall of the uterus did not appear thinner than usual. This mare had foaled twice previously, and was only eight years old.

Abstracts and Reports.

THE DESTRUCTION OF RATS.

Two kinds of rats are found in Great Britain, the black rat (*Mus rattus*), and the brown rat, sometimes called the Hanoverian or the sewer rat (*Mus decumanus*). The former, which has been longer established in this country, is the smaller of the two. It is more lightly built, but its ears are slightly larger and it has a thin tail eight or nine inches long, or about an inch longer than the rest of its body. The upper part of its fur is of a grey-black colour, the under parts being a dark grey. The brown rat is generally longer in the body, but shorter in the tail, which is never as long as the head and body combined. It has a blunter muzzle, and its fur is grey-brown above and white below. The fur of the brown rat, moreover, is rather coarser than that of the black rat.

The females of both species breed at a very early age, and though they go with young for six weeks they have several litters in the year, each litter comprising from six to fourteen young. Rats therefore increase in numbers very rapidly if sufficient food is available. It has been calculated that in India, where they breed all the year round, the offspring of a single pair would, if supplied with sufficient food and left unchecked, amount at the end of one year to thirty-five thousand. Fortunately such favourable conditions are never present.

Rats are omnivorous feeders, and when desperate with hunger are even cannibals, but they are by choice dependent on the food supplies which man prepares for himself and his domestic animals, or on the waste of such food. Many estimates have been made of the damage done by the rat population of Great Britain in a single year, but as these estimates are based on the assumption that the supplies consumed by rats would otherwise be available for human use or consumption the reasoning is unsound. It is, however, generally admitted that the damage done is incalculable. Rats frequent dwelling houses (generally only the lower floors), barns, granaries, poultry yards, slaughter houses, sewers, and other places where food supplies are stored, or the waste is thrown away. They also frequent rabbit warrens, and take to the fields when food is to be found there, returning to shelter and to breed in corn stacks in the autumn.

Apart from the food consumed by rats, much damage is done to buildings, floors, and other kinds of woodwork from their power of gnawing holes and passage ways. It is also known that the disease called plague may be spread to human beings by fleas from infected rats.

It is, therefore, highly desirable, both from an economic and a sanitary point of view, that rats should as far as possible be destroyed. It would, of course, be well if they could be entirely exterminated in Great Britain, but this is practically an impossibility. During the period of nearly two hundred years that has elapsed since the brown rat was introduced into this country, it has penetrated to the remotest parts of the British Islands, and is to be found in many ruined build- and other places from which it would be difficult to dislodge it. Since

rats can live on garbage, travel over wide areas, and breed very rapidly, a few pairs allowed to remain alive would quickly re-stock the country, and even if every rat were destroyed, others would undoubtedly be imported in some of the vessels that call at English ports. The expense and inconvenience of exterminating the rat population of this country and preventing re-importation would far outweigh the economic gain to be secured by their destruction.

The destruction of rats is essentially a matter for local effort, and the occasion for the attempt to be made is when the danger of injury from their presence outweighs the probable cost and trouble of killing them. Local effort, however, does not necessarily mean isolated or unsystematic effort. In many places it is true that rats can be kept down by cats, traps, and occasional rat hunts, and this is true of most dwelling houses, especially if the kitchen and outhouses are kept in a clean and tidy state so that the rats find it difficult to procure an abundance of food. It is also true of many farms where the buildings are well kept, but in other cases on farms, or in mills, malthouses, and other establishments where large supplies of food are stored, especially where several such buildings stand close together, combined effort is essential. In these cases the formation of a rat club such as is described in Leaflet No. 84 is desirable. It is customary in such cases for all the large occupiers of land in a given district, generally comprising several thousands of acres at least, to offer a small reward for every rat killed within the district, the tail being produced as a proof of slaughter. Occasionally, however, it happens that for sanitary or other reasons, especially when rats have been allowed to breed undisturbed for a long time, it is considered important to attempt the extermination of rats over a much wider area, and in this case a more elaborate organization is required. The following observations and suggestions may be found useful to those who propose to organize such a campaign.

There are three methods which may be employed in the destruction of rats: (1) hunting; (2) trapping; (3) the use of poison or rat virus. There is not much to be said about the first of these methods. Most residents in the country are acquainted with the ratting instinct of terriers, and with the employment of ferrets, and a knowledge of the practice can better be obtained by experience than by description. As regards traps, the spring trap which kills the rat at once when the spring is released is the best, but care must be taken to see that no other animal is caught, and traps should therefore be visited frequently. Another kind is the wire trap, on the eel-basket principle, which the rat can enter easily when attracted by the bait but cannot leave.

Rat poisons are sold in all country towns by chemists, and several patent or proprietary poisons are advertised in agricultural and other newspapers. They are generally composed of phosphorus paste or arsenic, but strychnine may also be employed, while the use of barium carbonate has also been recommended. A recent bulletin published in the United States Department of Agriculture discusses the relative merits of arsenic, phosphorus, strychnine, and barium carbonate as rat poisons. *Arsenic* is cheap, and perhaps the most popular poison for the purpose, but experiment showed that, measured by the results obtained, it is dearer than strychnine. It is variable in its effects. One part of arsenious acid may be mixed with twelve parts by weight

of oat or maize meal and made into stiff dough with white of egg. *Phosphorus* is almost as commonly used as arsenic, and is effective when used in an attractive bait; but in the paste forms, which contain from 1 to 4 per cent. of yellow phosphorus in glucose and other substances, the lower percentage is too small to be always effective, and the larger amount is dangerously inflammable. Many fires have been caused by phosphorus paste in the United States, and the Biological Survey does not recommend its use. It is said that there is no foundation in fact for the statement that phosphorus dries up or mummifies the body without odour when eaten by rats or mice. *Strychnine* may be effectively employed in the open and round farm buildings, but it is too rapid in its action for use in houses as the vermin would die on the premises. Dry crystals of strychnia sulphate may be inserted in portions of raw meat, sausage, or fish, and these placed in the burrows. Strychnine syrup may be prepared by dissolving ½ oz. of the sulphate in one pint of boiling water and stirring in one pint of thick sugar syrup; this may be used to moisten a bait of oatmeal, while wheat or maize may also be soaked in it. In all cases it is advisable that baits containing one of the above poisons should be obtained ready prepared from a pharmaceutical chemist. *Barium carbonate* is considered one of the cheapest and most effective poisons for rats and mice. It is without taste or smell, has a corrosive action on the mucous lining of the stomach, and, causing thirst, induces the vermin to seek water in the open, where they die. In the small doses used it is said to be harmless to domestic animals. It may be employed in the proportion of one part of the carbonate to four parts of meal, mixed to a dough with water. A convenient bait is composed of one part by measure of the mineral to eight parts of oatmeal, mixed to a stiff dough. The carbonate may also be spread on fish or moist toasted bread. In 1905 large quantities of a poisonous food were sent out by the Agricultural Botanical Institute at Munich for the purpose of destroying field mice, and it is stated that it chiefly contained barium carbonate. Plaster of Paris is sometimes used mixed with flour, which sets into a hard mass in the rat's stomach. It must be remembered that rats are very suspicious, and if they find that any number of their fellows die after eating any kind of food they will avoid such food for some time. It will be as well, therefore, to vary the form and appearance of the poisoned bait at intervals. Thus, after using poisoned bread for a while, oatmeal similarly treated should be used.

Apart from the risk of possible prosecution under the Acts which deal with the use of poisoned grain, meal, or meat, it is very necessary when using poisons to take precautions to avoid injury to other animals and human beings. (The Acts concerned are the Poisoned Grain Prohibition Act, 1863, and the Poisoned Flesh Prohibition Act, 1864.)

In any case poisoned baits should only be laid by authorized and responsible people. Their whereabouts should be carefully recorded, and they should be visited regularly and destroyed if not taken within a short period. The strictest precautions should be taken to prevent the bait being eaten by domestic animals, and if necessary, notices should be exhibited in places where baits are laid to warn people to keep dogs or other animals away from the place. When poisoned baits are laid by a Rat Club or other organization, it would be as well to

insist that each group of baits should be numbered, and its situation, success, or failure and ultimate destruction recorded in a book.

Rat viruses, on the other hand, of which there are several on the market, can be used without fear of direct injury to any animals other than rodents. These viruses are believed to be composed in every case of a culture of a microbe causing a specific disease of rats, which in some cases, at any rate, is contagious, so that the inoculated rat conveys the disease to his fellows. The uncertainty with which this method is attended is due partly to the difficulty of securing a successful infection in all cases, and partly to the fact that, if only slightly infected, rats recover and therefore become more or less immune to the disease.

It cannot be too strongly urged, therefore, that if there is to be a successful attack upon rats in any district, reliance should not be placed in any one of the methods referred to above, but that as far as possible under the circumstances *all these methods should be employed.* Rats are intelligent animals and will soon learn to evade any one of these devices, and will even vacate for a time the district in which they are being harried. If, therefore, it is proposed to exterminate the rats in a large district, means should be employed whereby this intelligence can be used to compass their destruction. With this object combined efforts should be made over a wide area, and the attack made in a circle radiating from a given spot in which it is considered that the final work of destruction can be accomplished with less difficulty. Rat hunts should be organized simultaneously on the circumference of this circle, traps and poison should be laid on the outside and food supplied on the centre to which the rats should be driven. Every precaution should be taken to see that no rats escape outwards, and their holes should be closed, and their runs and nests destroyed as the circle is gradually drawn closer. Finally, when a broad band at the circumference has been cleared, poisoned food should be employed in the centre, and virus laid where the rats can take the disease.—Board of Agriculture and Fisheries. (*Leaflet* 224.)

Miscellaneous.

UNIVERSITY OF LONDON.

B.Sc. Examination in Veterinary Science for Internal and External Students.

Pass List, 1910.

1802. Graves, Thomas Chivers, Royal Veterinary College.
1801. Sheather, Alfred Leslie, Royal Veterinary College.
1851. Thompson, Leonard, Royal Veterinary College.

Examiners: Veterinary Hygiene: S. Stockman, M.R.C.V.S., and G. H. Wooldridge, F.R.C.V.S. Veterinary Pathology: W. Bulloch, M.D., C.M., and Professor Sir John McFadyean, LL.D., C.M., M.B., B.Sc.

FACULTY OF SCIENCE (VETERINARY SCIENCE). GENERAL INTERMEDIATE EXAMINATION (PART II.) FOR INTERNAL STUDENTS.

PASS LIST, 1910.

1901. Edwards, James Thomas, Royal Veterinary College.

Examiners: Veterinary Physiology: Drs. W. D. Halliburton, and G. A. Buckmaster.

ROYAL COLLEGE OF VETERINARY SURGEONS.

FELLOWSHIP DEGREE.

A MEETING of the Board of Examiners for this Degree was held on December 3, 1910, at 10, Red Lion Square. Five candidates entered for the Examination, and all were successful. The following is a list of the new Fellows, together with the titles of their respective theses:—

Professor A. Gofton, "Fractures of the Hip-bone."
Captain E. Clive Webb, "Rabies and its Control in India."
Mr. A. B. Mattinson, "The Eradication of Bovine Tuberculosis."
Mr. E. M. Jarvis, "A Pyo-lymphangitis in Equines in Southern Rhodesia."
Mr. John Brown, "The Control of Tuberculosis by the Artificial Immunization of Calves.

The Examiners were Professor J. Macqueen and Messrs. J. Malcolm and W. Hunting, Mr. S. Villar being in the chair. The President of the College (Mr. W. Freeman Barrett) was also present.

FRED BULLOCK, *Secretary.*

EXAMINATIONS IN LONDON.

At a meeting of the Board of Examiners held in London on December 9 for the Written, and on and between December 16 and 22 inclusive for the Oral and Practical Examinations—

The following gentlemen passed their Final Examination:—

Mr. R. M. Aulton
" B. R. Body
" D'Arcy S. Beck
" J. McK. Brown
" L. F. Eady
" T. J. Faithfull Davies
" J. C. Gaunt
" B. G. M. Hickey
Mr. R. Moore
" J. de Meza
" U. F. Richardson
" G. A. Roberts
" W. K. Stephens
" H. D. Sparrow
" T. L. Vaisey

The following gentlemen passed their Third Examination:—

Mr. F. G. Buxton
" J. Bradley
" W. H. Kirk
" R. B. Leach
Mr. E. J. Lainé
" A. V. Nicholas
" C. W. Perrin
" B. M. R. West

The following passed their Second Examination:—

Mr. A. L. M. Bebb
" S. E. Hill
" C. J. R. Lawrence
" R. A. Murless
" A. A. Pryer
Mr. W. E. Petty
" E. M. Robinson
" S. L. Slocock
" P. L. Thierry

The following passed their First Examination :—

Mr. A. H. Adams*	Mr. B. J. W. Nicholas*
,, J. A. Edwards	,, L. D. D. Sewell

Marked thus * passed with Second Class Honours.

Examinations in Dublin.

At a meeting of the Board of Examiners held in Dublin on December 9 for the Written, and on December 13 and 14 for the Oral and Practical Examinations, the following gentlemen passed their Final Examination :—

Mr. J. M. White	Mr. G. A. Kelly
,, S. Hunter	,, J. S. MacCann
,, C. H. Bryans	,, F. J. Weir
,, P. A. Carroll	,, E. Wilson

The following passed their Third Examination :—

Mr. R. Devereux	Mr. L. C. Maguire*
,, W. Flanagan	,, R. Marner
,, J. J. G. Keppel	,, W. J. O'Donoghue
,, P. O'Connell	,, A. E. O'Neill*
,, R. P. Byrns	,, W. E. Phipps
,, J. Evans	,, W. H. Power
,, V. Fox	,, C. J. Ryan
,, L. J. Kelly	

The following passed their Second Examination :—

Mr. V. Kennealy	Mr. E. J. Clancy
,, T. F. Quirke	,, C. E. Huston*
,, P. J. Sheil	,, T. J. Carroll
,, E. H. Wyly	

The following passed their First Examination :—

Mr. J. Campbell	Mr. H. J. Lowe
,, W. G. Clarke	,, S. O'Donel
,, T. F. Donworth	,, M. H. Reid
,, J. J. English*	

Marked thus * passed with Second Class Honours.

Examinations in Edinburgh.

At a meeting of the Board of Examiners held on December 9 for the Written, and on and between December 14 and 17 inclusive for the Oral and Practical Examinations—

The following gentlemen passed their Final Examination :—

Mr. William Aitken	Mr. W. S. Lornie
,, H. Allison	,, H. C. Lowry
,, J. L. Cormack	,, J. P. Swan
,, H. Fraser	,, C. G. Thompson

The following passed their Third Examination :—

Mr. A. W. Carter	Mr. T. A. McClintock
,, W. Dalling	,, G. Currey

The following passed their Second Examination :—

Mr. L. Anderson	Mr. H. E. Jackson
,, R. E. Drennan*	,, S. E. Holmes
,, D. R. Williamson*	

Marked thus * passed with Second Class Honours.

EXAMINATIONS IN GLASGOW.

At a meeting of the Board of Examiners held in Glasgow on December 9 for the Written, and on December 14 and 15 for the Oral and Practical Examinations—

The following gentlemen passed their Final Examination :—

Mr. W. Anderson	Mr. W. M. Jackson
,, W. S. Inglis	,, D. A. Taylor
,, J. Dunlop	

The following passed their Third Examination : —

Mr. J. Scott*	Mr. W. Macfarlane*

The following passed their Second Examination :—

Mr. D. Pollock	Mr. J. McI. Galloway
,, D. G. MacLeod	,, P. J. Turner

Marked thus * passed with Second Class Honours.

EXAMINATIONS IN LIVERPOOL.

At a meeting of the Board of Examiners held in Liverpool on December 9 for the Written, and on December 15 and 19 for the Oral and Practical Fxaminations—

The following gentlemen passed their Final Examination :—

Mr. S. G. Millington	Mr. W. Taylor

The following passed their Third Examination :—

Mr. H. D. Lewis	Mr. A. D. Bunton

The following passed their Second Examination :—

Mr. A. D. Morgan	Mr. H. A. Thorne

The following passed their First Examination :—

Mr. J. W. Beaumont	Mr. M. W. Holland

Translations.

SOME RARE CASES OF RECOVERY IN PRACTICE.

By AD. HOFMANN.

Veterinary Surgeon, Radstadt.

Case I.—In June, 1909, I was called to a heifer, 1½ years old, which was affected eight days after calving with puerperal septicæmia, and had a temperature of 41° C.; appetite had gone, and milk flow ceased. The cervical canal was closed so that only radical treatment difficult and prolonged would give any hope of recovery. Ten litres of lukewarm ½ per cent. lysol solution was infused into the uterus, and the injected fluid was partly emptied after one or two fingers had been inserted into the mouth of the womb and the cervical canal, causing uterine contractions; 2 to 3 litres ½ per cent. alum solution followed. Treatment was rather difficult, for it was necessary that the disinfectant should pass well into the uterus. This was accomplished by means of an indiarubber probang pushed into the uterus through the cervical canal as recommended by Professor Rusterholz, and the fluid infused through it. Such an operation was continued for three-quarters of an hour. Such treatment may also be carried out by a fine bone or metal tube 6 to 8 cm. long, and a similar instrument attached as used by Evers in inflation of the udder. Such a tube is especially necessary where the cervical canal is nearly closed, and does not give way to finger or indiarubber tube pressure.

Treatment was continued fourteen days, and much chocolate-coloured discharge voided. On the 15th and following days a certain quantity of dead *débris* was still in the vagina and the fever remained present. Internally, ½ litre of spirit of frumenti and ½ litre of strong black coffee mixed were given three times daily, and the last eight days decoction of savin as well. Alcohol was also given, which I have found exceptionally useful where septic fever is present. Salicylic acid, antifebrin, antipyrin, and digitalis, &c., are too costly in cattle practice if used for a long time, and I have obtained equally good results with alcohol and black coffee.

As a cure was not effected in fourteen days, 5 to 8 litres of a 1 per cent. alum solution with 30 gm. of creolin was injected for three weeks, and after about twenty injections a cure began. For some days after this, the owner treated the heifer himself, and six months later the cow was pregnant. The long course of this treatment was due to the heifer being jumped at 9 months old by a bull that had got loose by breaking his chain. The fœtal coverings were consequently very firmly fastened to the cotyledons. The feed was composed of wheat bran gruel with salt, beet, green food, and meadow hay.

Case II.—The second case was in a cow which showed weakness of the hindquarters, high fever, loss of appetite, and had both hock joints swollen and painful. Examination showed retained afterbirth and secondary infection.

Treatment: First day, disinfection of the uterus with 1 per cent. bacillol solution, and infusion of ½ litre of 1 per cent. potassium iodide solution, into two teats, and ½ litre of 1 per cent. watery solution of

ferrum pyrophosphoricum with natrio citrico into the two other teats, with a view of forming iodide of iron in the blood. Internally, 50 gr. of salicylate of soda was given in savin decoction, and the loins and belly wrapped in hot flannel. On the second day of treatment there was an improvement, which I partly ascribed to the iodide of iron, which in human medicine is especially recommended for nourishing the central nervous system and has produced excellent recorded results.

After the second day ½ litre of spirit of frumenti and ½ litre of strong black coffee (without chicory) were given. On manual examination a handful of yellowish sodden remains of the afterbirth were removed. For several days disinfection of the uterus was undertaken twice daily, and on the fourteenth day the owner announced a complete recovery.

Case III.—A horse with hæmoglobinuria, in the winter, was dragged out of the field into the stable on a sledge. It was a severe case and I gave a guarded prognosis. The animal lay prostrate in the stall, and by his violent movements with the hind legs was dangerous to himself and surroundings. Further examination showed an imperceptible pulse and weak heart-beat. Rectal examination showed that the bladder was distended with urine. Therapy: emptying of the black-coloured urine from the bladder by means of the catheter and intensive massage of the organ. By catheterization alone it was not possible to empty the bladder, but by intensive massage of the anterior portion against the neck of the bladder the complete emptying of the urine was accomplished. A salt-water clyster to aid the alkalinity of the blood was given, and a dose of aloes with soda bicarbonate. To combat the heart weakness 15 g. of digalen was injected subcutaneously. Ten minutes after this injection the prostrate horse sprang up suddenly in the stall to the great astonishment of the bystanders. I will here remark that the digalen produced a wonderful and momentarily effect, and few other drugs could have produced a result so quickly. The effect of digalen on the heart is marked and noticeable, as District Veterinary Surgeon Dorn has already proved in certain cases.

Case IV.—A horse with strangles and dangerous complications; metastasis in both lobes of the lungs. The four weeks' treatment consisted of operative opening of large glandular abscesses in the head, and antiseptic treatment of the wounds with creolin, lysol, and bacillol solutions, without making progress, on which account during the last week the wounds were injected with 1 per cent. bacillol solution in about 1 litre of carbolic spirit (20 : 1,000), and the wound closed in a short time. The metastasis in the lungs took a favourable course, connective tissue capsules forming around the small abscesses, so that this case of recovery may be reckoned a rare one. Green food in the summer containing calcium and soda salts did its share in the healing process. For the treatment of the patient I chose potassium, calcium, sodium, and phosphoric acid, containing food in proportions arranged from thetable of G. Rupp—"Examination of Nourishing and useful means in Human Medicine," Heidelberg, 1900—and calculated proportionately for veterinary use.

(*Deutsche Tierärzt. Wochenschrift.*)

CHRONIC CYSTITIS AND RUPTURE OF THE BLADDER IN A MARE.

By SIVIERI.

A WELL-BRED mare, Frioul, aged 15, fell ill and ceased to urinate. She became semi-comatose, posterior limbs straddled, frequent attempts at micturition only giving vent to some drops of reddish filamentous liquid which trickled down the thigh. Temperature, 36·8° C.; respiration superficial, extremities cold. The mare had been led three times to the stallion six months previously, but signs of œstrum had reappeared since, and had apparently become very frequent in the days preceding the illness.

It was concluded, however, that a chronic cystitis had happened unperceived and had been mistaken for œstrum—vaginal exploration revealed in place of the bladder a fibrous oval body hardly the size of a turkey's egg.

On introducing a flexible caout-chouc sound into the bladder, only a few drops of urine were passed and on pushing the catheter slowly on no resistance was encountered. It was certain the bladder was ruptured. The mare died in the evening. The bladder was greatly retracted, and the walls thickened; the cavity was reduced to a cylindrical space of 2½ cm. in diameter; in its depth a little to the left the wall was ruptured to a length of 6 cm. The edges of the rent were slightly necrosed. Lesions of peritonitis explained the death.

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Letters and Communications, &c.

Captain H. Jolliffe; Captain E. C. Webb; Mr. Chambers; Mr. E. W. Hoare; Miss Jones; Captain Mellard; Mr. L. E. W. Bevan; Mr. Dalrymple; Mr. Palgrave; Mr. F. Bullock; Captain Leese; Board of Agriculture and Fisheries; Department of Agriculture and Technical Education for Ireland.

Books and Periodicals, &c., Received.

Proceedings of the Royal Society of Medicine; Encyclopædia of Sport, Parts XII. and XIII. (Mr. W. Heinemann); Journal of the Royal Army Medical Corps; Agricultural Journal of the Cape of Good Hope; Agricultural Journal of the Transvaal; American Journal of Veterinary Medicine; Bulletin of the Bureau of Sleeping Sickness; Rhodesian Agricultural Journal; Bureau of Annual Industry, U.S.A.

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